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INVESTMENT MANAGEMENT

Counterpoint Global Insights

The Economics of Customer Businesses

Calculating Customer-Based Corporate Valuation

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Introduction

Understanding the basic unit of analysis is an essential element of security analysis. An investor should have a point of view on how a company makes money, what opportunities exist, and the role competition might play in shaping the financial outcome. Boiled down to the core, the basic unit of analysis seeks to assess whether a company's investments are likely to earn a return in excess of the cost of capital.

An investment is attractive when it has a positive net present value, which occurs when the present value of its inflows exceeds the present value of the outflow. The concept applies whether it's a new retail store, a research and development outlay in search of a viable drug, a manufacturing plant, an acquisition, or a customer who transacts with a firm. The form of investment may be different, but the application of the net present value rule is the same.

This report focuses on the customer as the basic unit of analysis.[1] The idea of customer lifetime value (CLV) has been around for decades.[2] CLV equals the present value of the cash flows that a customer generates while they are engaged with the firm minus the cost to acquire the customer. The present value of cash flows, in turn, is a function of sales, costs, and customer longevity. Since the mid-1990s, there has been a growing emphasis on the value of customer loyalty.[3] But much of this work is limited because it does not tie all the way to shareholder value.[4]

Daniel McCarthy and Peter Fader, professors of marketing, have developed a robust framework they call "customer-based corporate valuation" (CBCV), which links customer economics to corporate value.[5] This allows investors to build a model, based on the drivers of customer value from the bottom up, that generates a warranted stock price. It also lets investors assess what expectations for the drivers of customer value are priced into a company's stock price.[6]

The ability to apply this framework varies by business. Companies that rely primarily on subscriptions, advance agreements to pay for a good or service, tend to be easier to model because the key determinants of value are generally explicit. The drivers for non-subscription businesses are the same but are often trickier to assess. These include customer retention, the pace of repeat purchases, and the size of orders.[7]

Sales, operating costs, and investments are the fundamental building blocks of shareholder value. Sales growth is the most important of these for companies that are expected to earn a return on investment above the cost of capital. Providing a more accurate way to forecast sales growth is one of CBCV's most significant contributions to the valuation literature.

Customers have always been the lifeblood of corporate value. But CBCV is more important today than before because of the rise of subscription businesses. This growth has been spurred by the widespread adoption of the Internet in the mid-1990s and smartphones in 2007. Zuora, a subscription management platform provider, calculates that the companies in its Subscription Economy Index grew revenues 17.8 percent per year from 2012-2020, substantially outpacing the 2.0 percent rate for the S&P 500.[8]

Software as a service (SaaS), movie and music streaming, and e-commerce are examples of industries that have emerged in recent decades. And many traditional businesses have had to adapt. For example, the *New York Times* had weekday circulation of about 1.1 million when it launched its digital site in 1996. Today, its 5.3 million digital-only news subscribers are nearly 7 times greater than its print subscribers.[9]

In this report, we discuss a framework for valuation, explain the elements of the CBCV model, review how companies create value, provide a case study on the postpaid segment of AT&T Mobility, examine trade-offs in the drivers, and explore common errors. We believe this study is both richer and more nuanced than what many companies and analysts present.

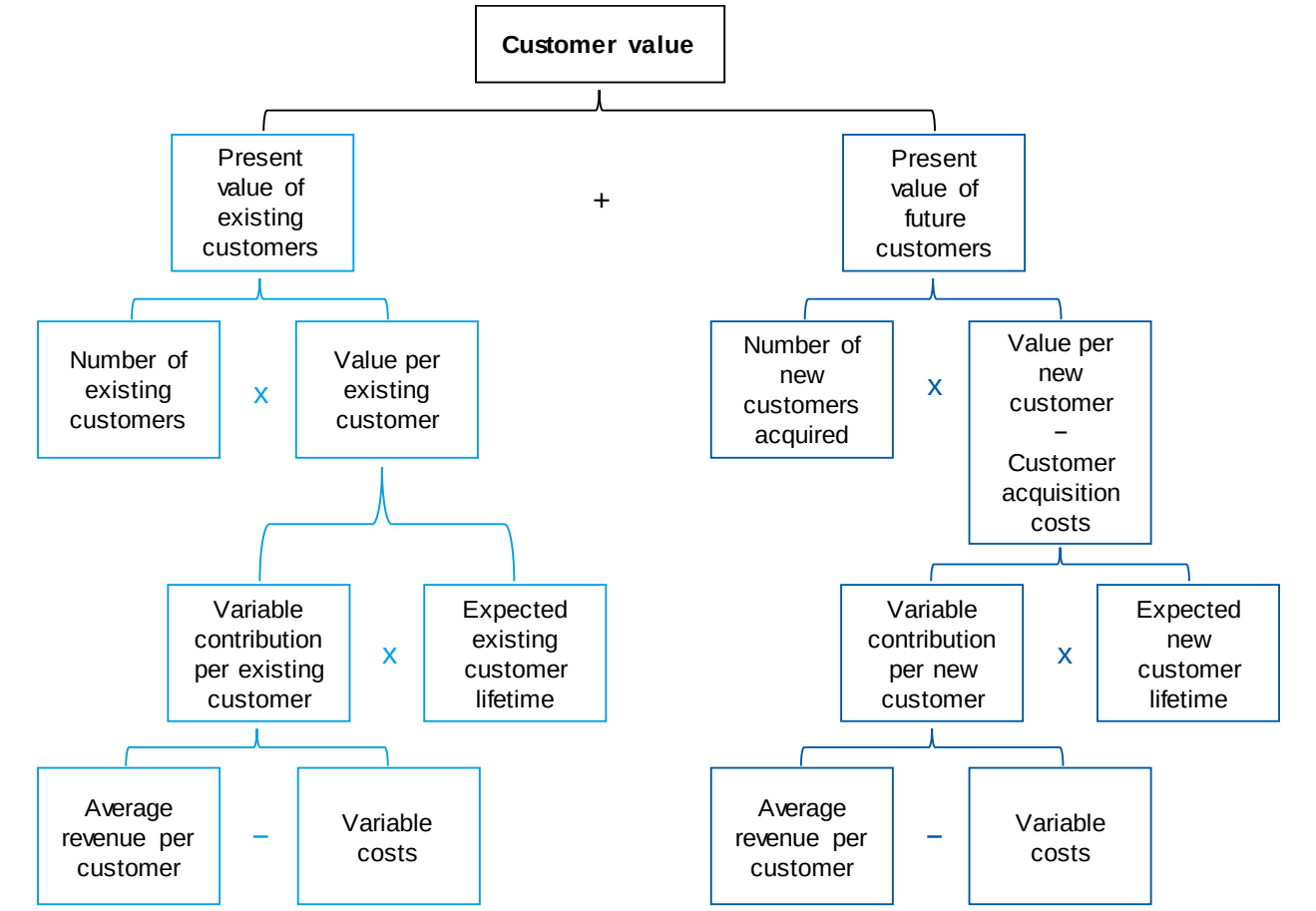
Framework for Valuation

You can break down corporate value into two parts.[10] The first reflects a continuation of the operations that the company has already established and assumes that growth creates no value. This is commonly called the steady-state value. The second is based on value-creating investments the company has yet to make. This is referred to as the present value of growth opportunities (PVGO). We estimate that the steady-state value has been about two-thirds of the value of the S&P 500 Index on average since 1960, with the PVGO representing the other one-third.[11]

In the context of this breakdown, we can think of current customers as the basis for the steady-state value and future customers as the source of the PVGO. Exhibit 1 shows the drivers that contribute to each component of value. Most of the value of a mature company is in the steady-state value because the firm has largely penetrated the market. Most of the value of a young company is in the PVGO as the business has yet to fulfill its potential.

In reality, the analysis is not as tidy as this separation suggests. For example, current customers eventually leave and some of them return later. But this distinction does draw attention to the fact that it is inappropriate to extrapolate existing CLVs (the left side of exhibit 1) and to the need to focus on marginal CLVs (the right side of exhibit 1).

Exhibit 1: Customer Value Comes from Existing and Future Customers



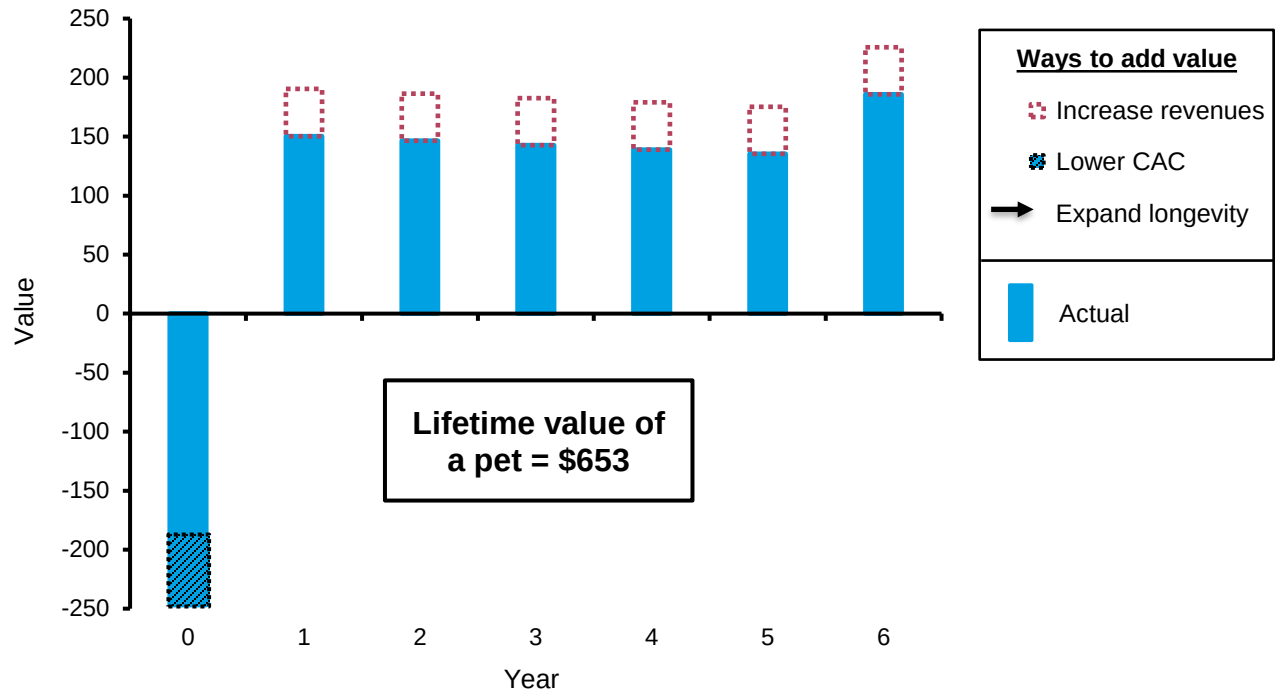
Source: Based on Rob Markey, "Are You Undervaluing Your Customers?" Harvard Business Review*, Vol. 98, No. 1, January-February 2020, 42-50.*

Determining the values in the boxes in Exhibit 1 requires a number of calculations and inputs. These figures are about customers, sales, and costs. Public market investors have to rely largely on corporate disclosures, supplemented by alternative data such as credit card transactions, for many of these numbers. Some companies provide a lot of useful data and others don't.

Trupanion, a company that sells pet insurance, shares a lot of information that allows an investor to estimate these key metrics. In fact, the company's 2019 annual report provides a step-by-step analysis from customer value to a full 15-year discounted cash flow model.[12]

The company's most recent figures show a lifetime pet value, equivalent to CLV, of about $650. Exhibit 2 shows that the present value of the cash flows that a pet owner generates is around $900 (the blue bars going up) and that the cost to acquire a pet is roughly $250 (the blue bar going down). Pet owners insure their pets for about six and a half years on average.

Exhibit 2: Trupanion's Lifetime Value of a Pet



Source: Trupanion and Counterpoint Global cost estimates.
Note: As of 12/31/2020; CAC=customer acquisition cost.

Here are some of the metrics that the company shared as of year-end 2020:[13]

Current pets enrolled:	862,928
Average revenue/customer/month:	$60.37
Customer longevity:	~6 years
Average cost/customer/month:	~$45
Customer acquisition cost:	$247

And here are some figures to help assess the future and to discern the present value:[14]

Potential number of pets:	180 million (North America)
Total addressable market:	$32.5 billion
Cost of capital:	7.8%

Trupanion's disclosure is exemplary but it is important to bear in mind that this is a snapshot. The key metrics that determine value are dynamic. A grasp of these changes through time requires an understanding of not just today's CLV but also consumer surplus, the size and maturity of the market, the nature of competition, and the trade-offs between the metrics.

Even a brief study of exhibits 1 and 2 reveals the main drivers of value. A company can add value by acquiring additional customers that are economically attractive, increasing the cash flow per period (independent of longevity), keeping a customer longer (independent of cash flow per period), or lowering the cost to acquire a customer. The challenge is that there are trade-offs between these goals. For example, keeping a customer for a longer time may require more retention spending, which lowers cash flow per period.

Equally important is building a model that ultimately reflects shareholder value.[15] For example, measures such as customer equity (CE) or the ratio of customer lifetime value to customer acquisition cost (LTV/CAC) rarely consider all of the relevant investments and costs, including taxes and the cost of capital. As a consequence, a large gap remains between such metrics and shareholder value.

A comprehensive model should allow an executive or investor to calculate corporate value based on the present value of future free cash flow. Free cash flow equals net operating profit after taxes minus investments in future growth. Corporate value plus cash and other non-operating assets minus debt and other liabilities equals shareholder value. Most models and shorthands used in the executive and investment communities fall short of capturing what ultimately matters.

We are now ready to turn to the core elements in the model.

Model Elements

We find it useful to build the model using three related elements. The first, the bedrock, is the customers. We want to consider the number of potential customers, the pattern of customer acquisition, and how long a customer is likely to stick around. The second element is revenue and revenue growth, which derives from the customer base. We want to pay particular attention to modeling customer behavior so that we can forecast revenues as accurately as possible. The final element is costs. Our primary focus is on customer acquisition costs, but we consider the elements of operating leverage as well.

Customers. Understanding the total addressable market (TAM) is a good starting point for a CBCV analysis.[16] We define TAM as the revenue a company would generate if it had 100 percent share of a market it could serve while creating value. TAM is not about how large a firm can be, but rather how much it can grow while adding value.

TAM is important because it helps quantify the size of a company's opportunity. It also allows for an assessment of where the company currently stands on that path to full potential. Comparing thoughtful answers to these questions to what expectations are priced into a stock provides an opening for possible excess returns.

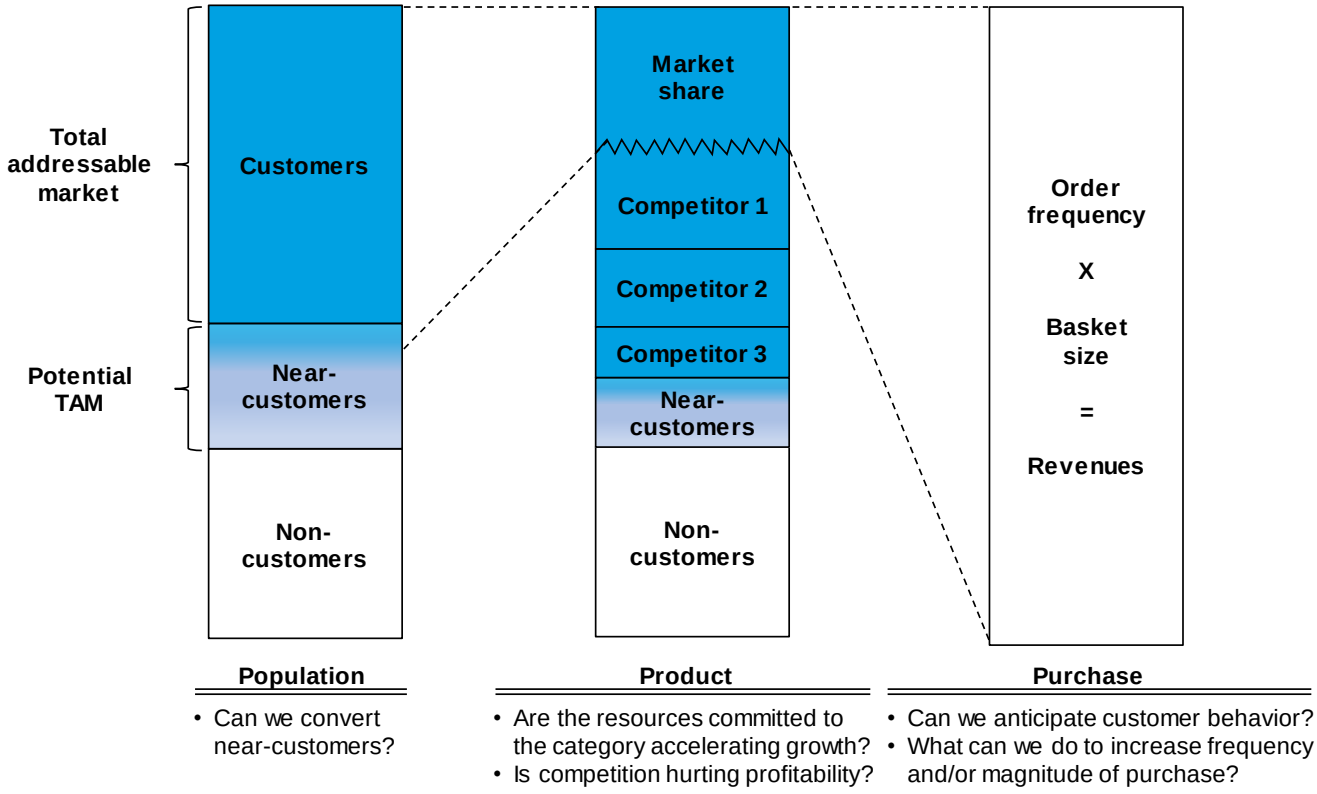
Exhibit 3 shows the basic way to model market potential. The first part is an estimate of the total population separated into customers, near customers, and those who are unlikely to become customers. Factors that make a person less likely to transact with a firm include the cost of the service relative to disposable income, access to complementary devices, and demographic profile. One way to increase the TAM is to figure out how to convert near customers, who are close to buying the good or service, into customers. Population growth and access to global markets mean that the TAM can increase over time.

The next part is product adoption. This includes the adoption rate of the good or service and, more significantly, competition. Large and lucrative markets attract rivals. Rivalry has countervailing effects on a market. On the one hand, competitors tend to draw resources to the market. That accelerates adoption. The ride share market is a good illustration. Competition led to more promotional activity, which lowered the cost for customers and raised the rate of adoption.

On the other hand, competition tends to hurt profitability in the short run. The same promotions that generate customer growth also penalize CLV through lower profits and higher CACs.

The final part is customer behavior. This captures how often customers engage with the company and how much they spend when they do transact. Some businesses see their customers increase their spending for subsequent purchases after their first purchase, while others realize a decrease. Behavior is more predictable for subscription businesses, where the customer pays a set amount at a specified time for access to a good or service, than for non-subscription businesses where transactions are at the discretion of the buyer.

Exhibit 3: Components of Total Addressable Market Forecast



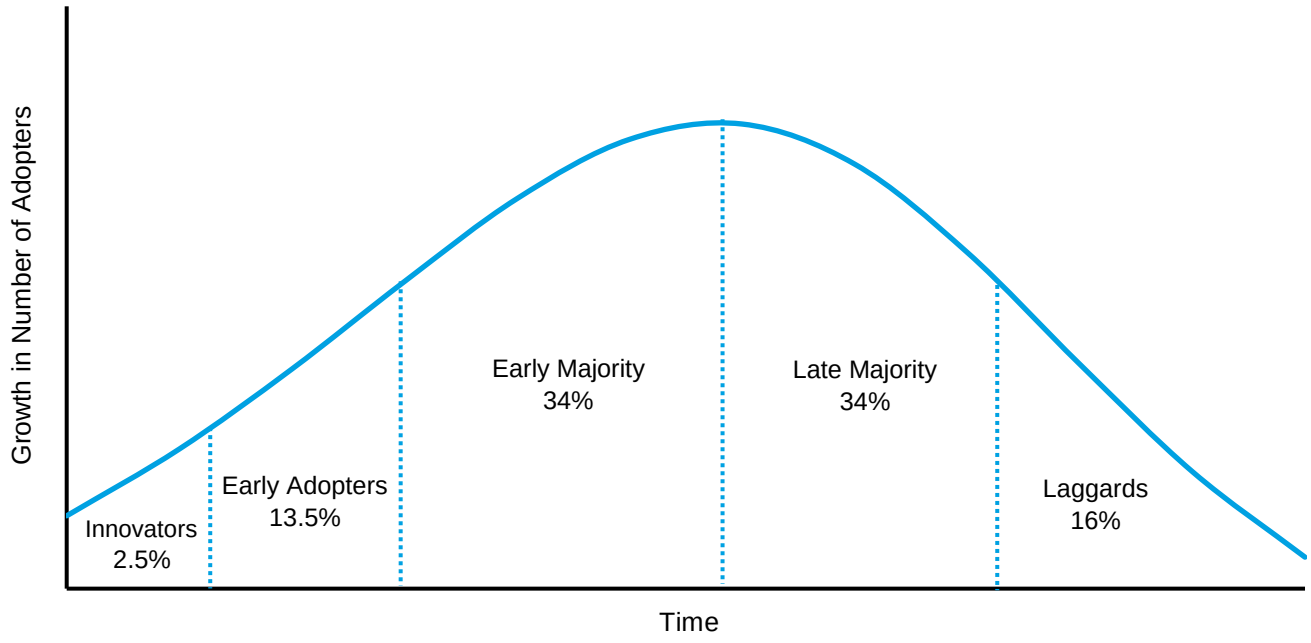
Source: Counterpoint Global.

Everett Rogers was a sociologist who did foundational work on the diffusion of innovation. He created a taxonomy of adopters, from "innovators" to "laggards" (see exhibit 4). Rogers noted that the number of categories and the size of each were choices. But the basic idea is that an individual's category reflects when he or she accepts a new innovation relative to other adopters. Note that in Rogers's model, the innovators and early adopters combined are only 16 percent of the total potential market and an equivalent percentage are laggards.[17]

Geoffrey Moore, an organizational theorist and consultant who also happens to have a PhD in English literature, suggests that many products or services fail to transition from the early adopters to the early majority. He calls that phase "crossing the chasm."[18]

Understanding where a company or industry is on the adoption curve is important because both CAC and cash flows can change as a company's customer base grows. You can imagine that the innovators, a group Moore evocatively calls "enthusiasts," have little or no CAC and generate good cash flows. But as you move through the adopter groups, the cost to bring in customers can rise and the proclivity of those customers to spend can fall relative to the early adopters. These tried and true models show why it is a mistake to assume customers are a homogenous bunch.[19]

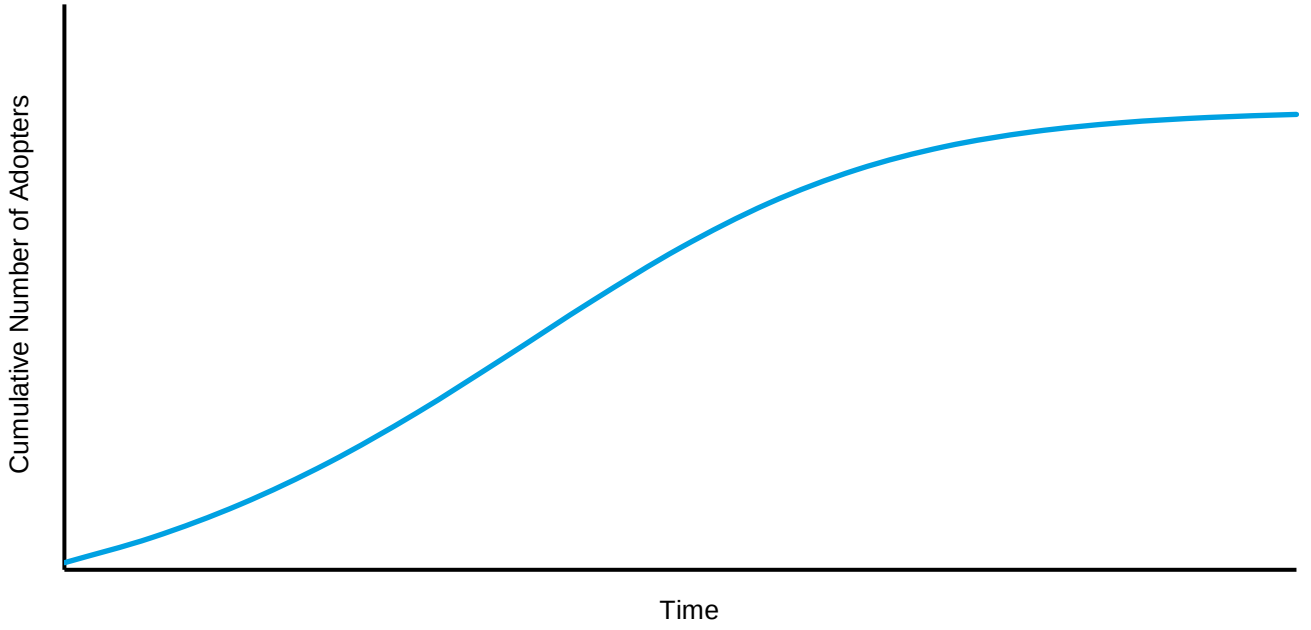
Exhibit 4: Everett Rogers's Adopter Categorization



Source: Based on Everett M. Rogers, Diffusion of Innovations, Fifth Edition *(New York: Free Press, 2003), 281.*

A sigmoid curve, or S-curve, measures total users where the horizontal axis represents time and the vertical axis captures the cumulative number of adopters (see exhibit 5). Rogers's adopter distribution is derived from the S-curve and measures the growth in users over time. Some sense of where a company sits on this curve provides context for thinking about potential value creation.

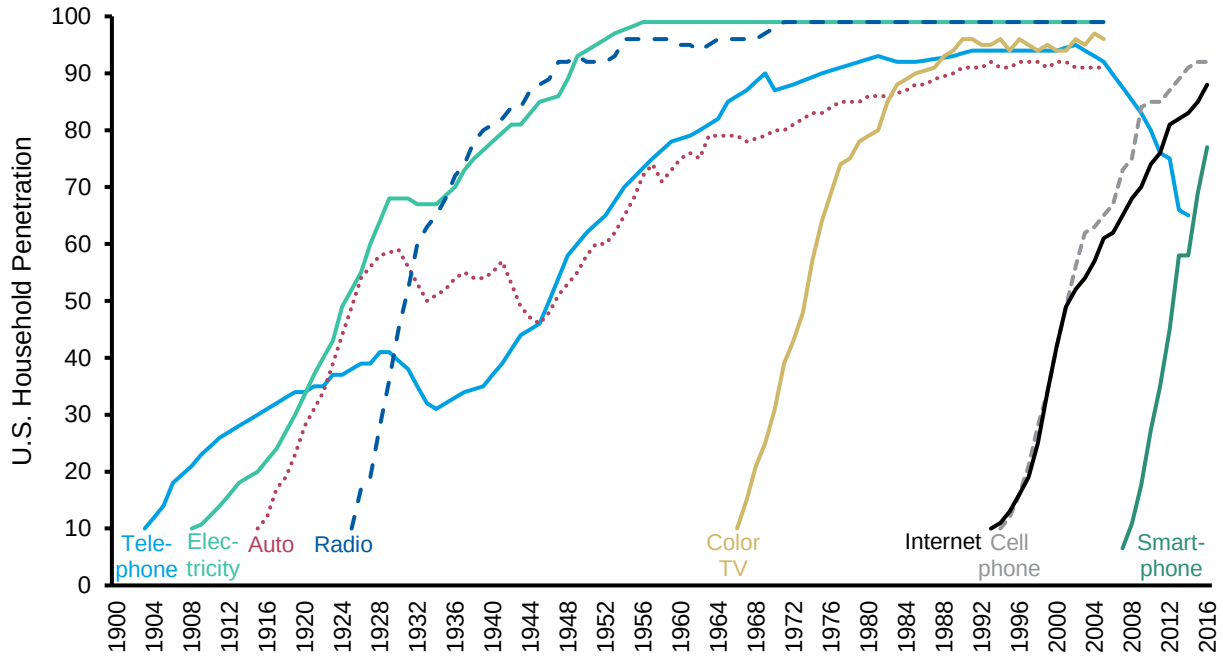
Exhibit 5: S-Curve of Adoption



Source: Counterpoint Global.

Exhibit 6 shows that the rate of diffusion for a number of important technologies has been speeding up. For example, the household penetration the telephone achieved in 50 years took the smartphone only 5. The rise of social networks has been even more rapid. The social media site TikTok needed only 2.5 years to reach 1 billion monthly average users, versus 6 years for WeChat, 7 years for WhatsApp, and 8 years for Facebook.[20]

Exhibit 6: The Rate of Diffusion Is Speeding Up



Source: Asymco.
Note: Telephone data for 2006-2008 estimated using 2005 and 2009 values and assuming an equal change per year.

Rogers identified five variables that determine the rate of adoption. These include the following:[21]

- **Relative advantage:** How much better the new product is than the product that came before;
- **Visibility:** How visible the results of a product are to others;
- **Trialability:** How easy it is to try the product;
- **Simplicity:** How straightforward the product is to understand and use;
- **Compatibility:** The consistency of the new product with existing values, experiences, and needs.

Christian Terwiesch and Karl Ulrich, professors of operations and information management, applied Rogers's framework to four customer-based products (see exhibit 7). Their analysis suggests that the cumulative effect of these variables accurately predicted the actual time to adoption, or in their more suggestive term, "years to 'take off.'"

Exhibit 7: Determinants of Adoption Speed for Four Customer-Based Products

	Innovations (Scale: 1=Worst, 5=Best)			
Drivers of Diffusion	**EZ Pass Auto Toll System**	**Web Browser**	**Mobile Phone**	**Segway Personal Transporter**
Relative Advantage	**5** No waiting at toll booths	**5** Free, instant information	**4** Wireless calling, but initially expensive	**1** Better than walking?
Visibility	**5** Obvious to all users	**1** Not very visible	**4** Visible in public	**5** Highly visible
Trialability	**2** Must enroll to try	**5** Free download	**2** Contract required	**1** $10K commitment
Simplicity	**3** How does payment work? Who installs?	**5** Click and view	**2** "Send" button? Reception, coverage?	**2** How does that thing work? What powers it?
Compatibility	**5** All vehicles	**5** All PCs	**5** Fits in pocket or bag	**2** Storage? Locking? Where to ride? Charging?
Predicted Relative Rate	Fast	Very fast	Moderate	Very slow
Years to "Take Off"	~3	~2	~9	15 and counting

Source: Christian Terwiesch and Karl T. Ulrich, Innovation Tournaments: Creating and Selecting Exceptional Strategies *(Boston MA: Harvard Business Press, 2009), 160.*

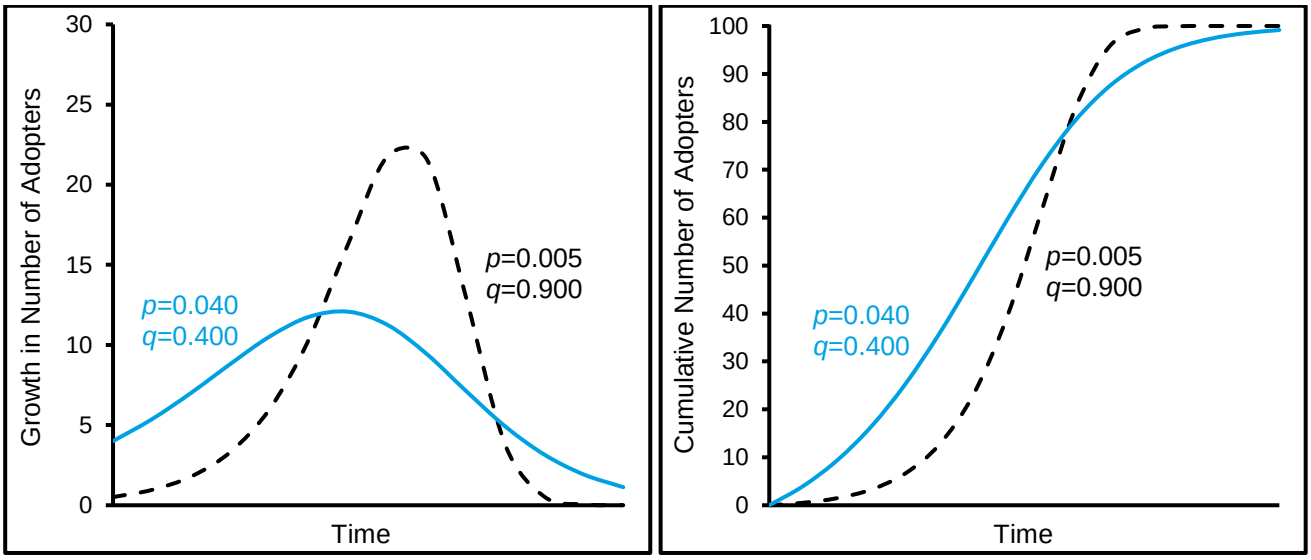
Frank Bass was a professor of marketing who was heavily influenced by Rogers. Bass developed a famous diffusion model with three parameters:[22]

- **Coefficient of innovation (*p*).** This parameter captures influence that is outside a social system. In other words, an adopter buys the good or service even though it is not yet popular. This captures the behavior of innovators and early adopters in the Rogers model.
- **Coefficient of imitation (*q*).** This parameter reflects that future adoptions are a function of current users. It's the power of word of mouth within a social system. A potential adopter wants something because all of his or her friends have it. This matches closely Rogers's variable of "visibility" that determines the rate of adoption. The empirical data show that the coefficient of imitation is significantly larger than the coefficient of innovation.[23]
- **An estimate of the number of eventual adopters (*m*).** This parameter seeks to determine the size of the market. The TAM analysis above can help estimate this figure.

Exhibit 8 brings the model to life by showing outputs for different values of *p* and *q*. We assume that *m* is 100. We show values for *p* of 0.04 and 0.005 and values for *q* of 0.4 and 0.9. The empirical parameters for about 50 past diffusions show average values of 0.037 for *p* and 0.327 for *q*.[24] One way to estimate parameters for a new good or service is to consider carefully analogies from past launches.[25]

The pattern of adoption is similar to a normal distribution when *q* is above zero (left panel of exhibit 8), and the penetration of users follows an S-curve when *q* is greater than *p* (right panel of exhibit 8). In fact, we made exhibits 4 and 5 with a *p* of 0.04 and a *q* of 0.40.

Exhibit 8: Output of Bass Model Based on Different Parameters



Source: Counterpoint Global.

Diffusion models have limitations, including an inability to capture repeat purchases easily, to reflect changes in product or service attractiveness as a function of size, and to include the effect of seasonality. But these shortcomings are offset by insights gained from understanding the number of potential customers and how they might engage with the firm. For instance, researchers have drawn a link between word of mouth marketing, related to the coefficient of imitation, and customer lifetime value.[26]

With a sense of the number of potential customers and the likelihood they will engage with a good or service, we turn to the issue of customer retention. Leading researchers in the field suggest that "retention is the customer continuing to transact with the firm."[27] This description captures key concepts, including the idea that the customer drives retention, the transaction can be monetary or non-monetary, and the agreement can be contractual or non-contractual.

The main terms and definitions for retention include the following (the time period should be consistent):

Churn rate = percentage of customers who end their relationship with a company during a period

Retention rate = 1 – churn rate

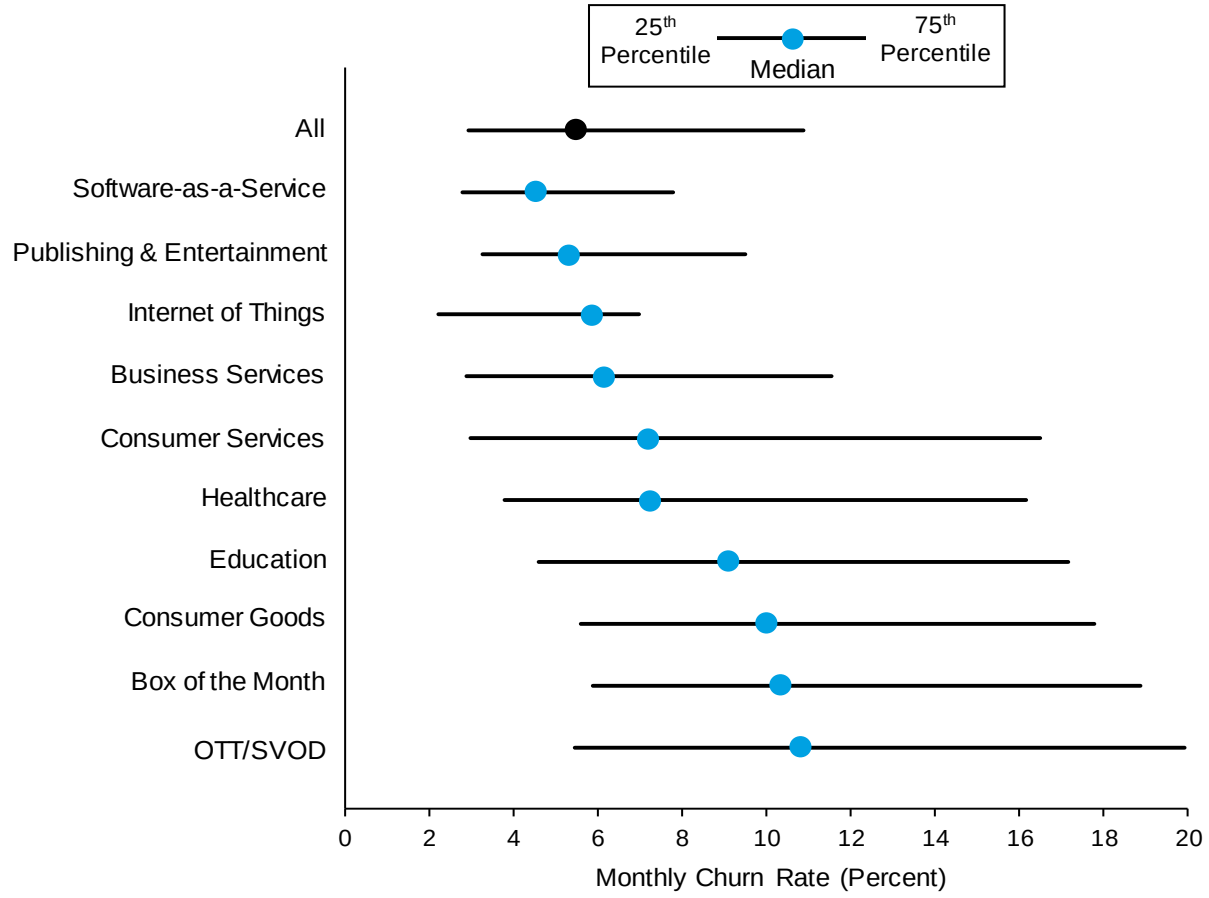
$$\text{Customer longevity} = \frac{1}{\text{churn rate}}$$

To illustrate, Trupanion reported that its average monthly retention rate at year-end 2020 was 98.71 percent. From that, we know that the churn rate is 1.29 percent per month (1 − 0.9871 = 0.0129), and that the average longevity per pet is 77.5 months (1 ÷ 0.0129 = 77.5), or just under 6.5 years. Longevity is useful to consider in the context of the payback period, the time it takes for the present value of customer cash flows to equal the customer acquisition cost. Trupanion's payback period is about 20 months.

It is easier to calculate retention rate for contractual businesses than for noncontractual ones. The challenge for noncontractual businesses is that customer purchases are periodic, making it difficult to assess whether a customer is still engaged with the firm. In these cases, inferring behavior from aggregate statistics can be helpful. But applying metrics based on current customers to new customers, for either a contractual or non-contractual business, may be a mistake because of survivorship bias. The customers that remain are the good customers and hence may not be suitable proxies for new ones. For this reason, older companies have lower churn, on average, than younger ones do.

Exhibit 9 shows the monthly churn for a handful of industries. The median for these industries is 5.5 percent, with a low of 4.6 percent for software as a service and a high of 10.8 percent for subscription-based video on demand (SVOD), which is delivered without a cable or satellite subscription, or "over the top" (OTT).

Exhibit 9: Monthly Churn Rate for a Handful of Industries



Source: Recurly Research.
Note: Analysis of over 1,500 subscription sites processing subscription billing on the Recurly platform from January-December 2019.

The churn rate is relevant only in the context of the other drivers of CLV, including the cash flows the customer generates while active and the customer acquisition cost. But it makes clear why looking at the number of customers over time is insufficient to understand the prospects for value creation.

Imagine that company A and company B both report 1,000 customers at the end of one quarter and 1,100 at the end of the next one. On the surface they look the same, having grown their customer bases by 10 percent. But now consider that company A had a 10 percent churn rate and company B had a 30 percent rate. Company A

would have to acquire 200 customers to achieve that growth (1,000 – 100 + 200 = 1,100) while company B would have to acquire 400 (1,000 – 300 + 400 = 1,100). Assuming an equivalent customer acquisition cost, company B would pay a lot more than company A to achieve the same net growth in customers.

Longevity can add substantial value provided a customer generates positive cash flows while transacting with the firm. Fred Reichheld, a consultant and early leader in this type of analysis, estimated that a 5-percentage point increase in annual customer retention increased the CLVs for a number of industries by an average of 75 percent.[28] A more recent study showed that a one percentage point improvement in retention added more to CLV than an equivalent improvement in acquisition cost and operating profit margin, all else being equal.[29]

But there's even more to the story. It is often the case that customers spend more the longer they stay. One dramatic example is Coupang, a Korean e-commerce company, which revealed the spending of its cohorts over time (see exhibit 10). A cohort is defined as a group of buyers who made their first purchase within a specific period. To illustrate, the cohort from calendar 2016 collectively spent nearly 3.6 times more four years later than they did in the initial year, despite those customers who left. Increased sales per customer correlates with increased profit per customer assuming that the company's cost structure is partially fixed.

Exhibit 10: Coupang, Inc.: Spending by Cohort, Indexed to Year 1

		Year				
		1	**2**	**3**	**4**	**5**
Cohort	**2016**	1.00x	1.37x	1.80x	2.37x	**3.59x**
	2017	1.00x	1.80x	2.35x	**3.46x**	
	2018	1.00x	1.98x	**3.06x**		
	2019	1.00x	**2.19x**			

Source: Coupang, Inc., S-1 Filing*, February 12, 2021.*

Exhibit 11 summarizes the academic research about the variables that determine churn rate for contractual firms. We discuss a few of them.

Customer satisfaction tends to be a good predictor of churn rate. One popular measure of satisfaction is the Net Promoter Score (NPS). To calculate the score, surveyors ask customers about the likelihood they would recommend a company, product, or service to a friend or colleague on a scale from 0 (not likely at all) to 10 (extremely likely). NPS is the percentage of customers who provide a rating of 9 or 10 (promoters) minus the percentage of those who answer 6 or below (detractors). Scores above 70 are considered excellent and those in the range of 30-70 are very good. While useful by itself, NPS has been found to be even more effective as a complement to other metrics.[30]

Exhibit 11: Predictors of Churn Rate in Contractual Settings

Factors	Example
Customer satisfaction	Emotion in emails
	Customer service calls
	Usage trends
	Complaints
	Previous non-renewal
Usage behavior	Usage level
Switching costs	Add-on services
	Pricing plan
	Ease of switching
Customer characteristics	Psychographic segment
	Demographics
	Customer tenure
Marketing	Mail responders
	Response to direct mail
	Previous marketing campaigns
	Acquisition method
	Acquisition channel
Social connectivity	Neighbor churn
	Social network connections
	Social embeddedness
	Neighbor/connections usage

Source: Eva Ascarza, Scott A. Neslin, Oded Netzer, Zachery Anderson, Peter S. Fader, Sunil Gupta, Bruce G. S. Hardie, Aurélie Lemmens, Barak Libai, David Neal, Foster Provost, and Rom Schrift, "In Pursuit of Enhanced Customer Retention Management: Review, Key Issues, and Future Directions," Customer Needs and Solutions*, Vol. 5, No. 1-2, March 2018, 65-81.*

Switching costs, the costs consumers bear when they switch from one supplier to another, also determine the churn rate. Loyalty programs are a form of lock-in that create switching costs. Bundling, when a company sells more than one product in a package for a single price, can also increase switching costs and reduce churn.[31]

Social connectivity also predicts the churn rate. Customers who feel linked to others in the social network, a concept called social embeddedness, are less likely to churn. This has particular relevance in social and communications networks. We will review this point in more detail when we discuss network effects.

Researchers have developed statistical models that predict churn more accurately than can traditional methods.[32] Marketing models that consider market penetration and brand loyalty can also be helpful.[33] Ultimately, some factors that determine the churn rate are in a company's control and others are not. Poor service may compel a customer to quit their local gym, but they are sure to quit if they move out of town.

Companies can proactively try to anticipate which customers are at risk of leaving and figure out how to keep them or reactively try to change the minds of customers who quit. Allocating resources between these alternatives is tricky.[34] For example, research shows that the best customers to target for retention are not those most likely to leave per se but rather those who are most at risk of leaving and are likely to change their minds.[35] Further, obvious incentives to stay, such as price concessions, can be effective in the short run but are too easy for competitors to imitate. By contrast, non-price incentives, such as product improvement, can be better for the long term.

Revenue Growth. We now have some sense of the addressable market, how potential customers might be converted into actual customers, and how long they might stay with the company. The next step is to build a model of revenue and revenue growth.

McCarthy and Fader recommend a customer cohort chart (C3), which shows the total revenue by period for each acquisition cohort. To construct the chart properly it is helpful to build a revenue forecast using three parts. The first is the number of customers, which was our focus in the prior section. The second is total orders, which captures how frequently those customers purchase goods or services. The third is total revenues, which considers the average basket size, or revenue per order. The variance of order frequency and basket size is lower for subscription businesses than for non-subscription companies. Exhibit 12 illustrates the concept with an example.

Exhibit 12: Bottom Up Model of Customer Revenue

Number of Customers		**Period**					
	Gross additions	0	1	2	3	4	5
Cohort 1	4,000	4,000	2,600	1,924	1,578	1,325	1,126
Cohort 2	5,375		5,375	3,333	2,233	1,764	1,464
Cohort 3	7,000			7,000	4,200	2,814	2,195
Cohort 4	8,825				8,825	6,089	4,506
Cohort 5	10,500					10,500	7,035
Cohort 6	12,100						12,100
Total customers		4,000	7,975	12,257	16,835	22,492	28,426

Total Orders						
	0	1	2	3	4	5
Cohort 1	9,000	5,850	4,810	4,339	3,976	3,661
Cohort 2		13,438	9,164	6,698	5,733	5,124
Cohort 3			21,000	13,650	9,849	8,231
Cohort 4				28,681	21,312	18,024
Cohort 5					36,750	26,381
Cohort 6						45,375
Total orders	9,000	19,288	34,974	53,368	77,620	106,796

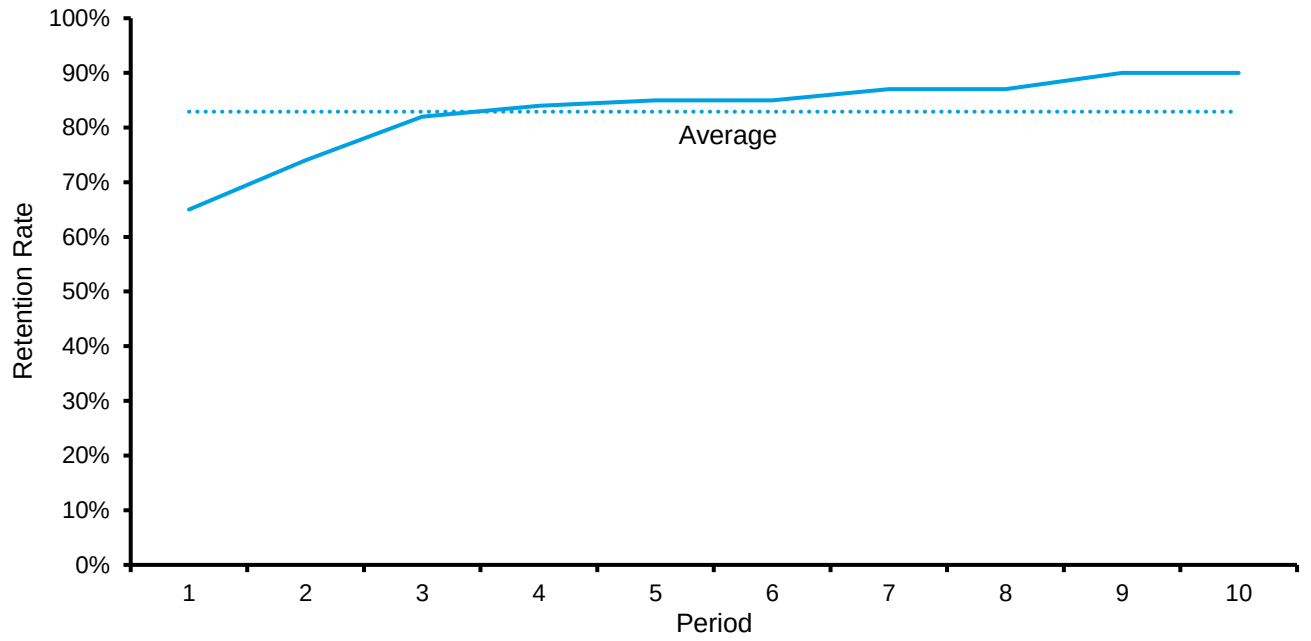
Total Revenues						
	0	1	2	3	4	5
Cohort 1	405,000	263,250	264,550	282,010	298,182	292,881
Cohort 2		631,563	522,369	448,788	441,414	420,177
Cohort 3			1,029,000	805,350	679,581	691,400
Cohort 4				1,462,744	1,300,055	1,279,717
Cohort 5					1,947,750	1,662,019
Cohort 6						2,495,625
Total revenues	**$405,000**	**$894,813**	**$1,815,919**	**$2,998,892**	**$4,666,981**	**$6,841,818**

Source: Counterpoint Global.

This bottom up analysis allows us to gain insight in a few ways. The top panel provides us with the numbers we need to calculate the churn rate. For instance, look at the change in customers from the base year, period 0, to period 1. The company started with 4,000, added 5,375 new ones, and lost 1,400 from the original cohort. The net result is 7,975 customers at the end of period 1 (4,000 + 5,375 – 1,400 = 7,975). The churn rate in that period was therefore 35 percent (1,400 ÷ 4,000 = 0.35).

Before we return to exhibit 12, it is important to note a common mistake. Companies and investors sometimes assume a constant retention rate for a pool of customers acquired in the same period. This can lead to an undervaluation of the cohort by 25-50 percent.[36] A more typical pattern is a retention rate below the average in early periods following acquisition and above the average for subsequent periods (see exhibit 13). In other words, a customer is more likely to leave early than late.

Exhibit 13: Retention Curves Are Rarely Constant



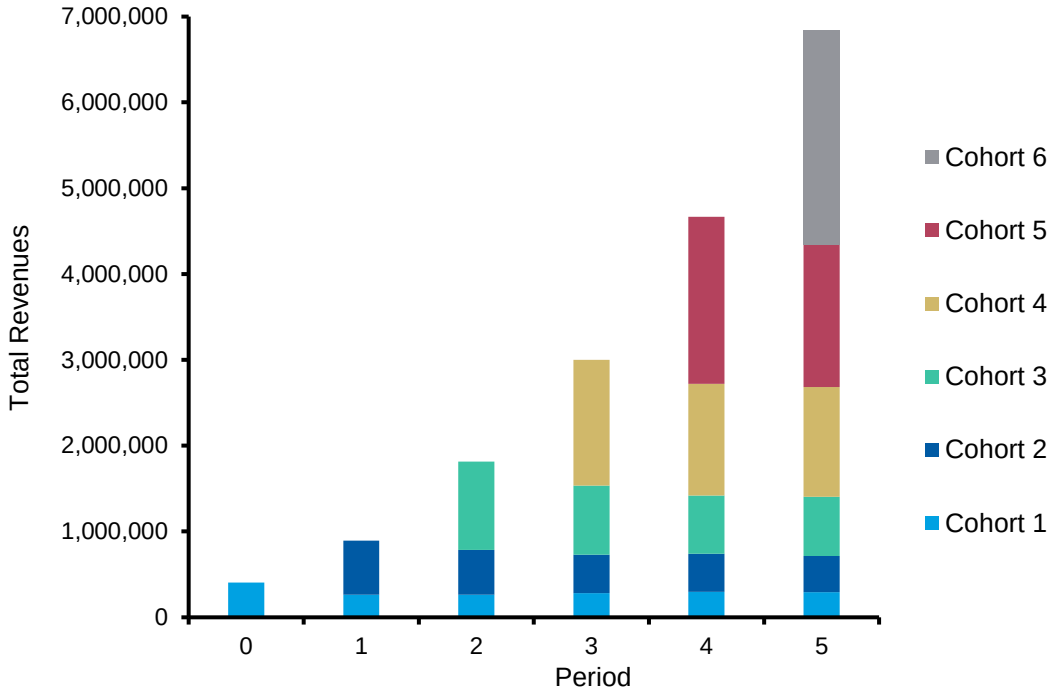
Source: Counterpoint Global.

The middle panel of exhibit 12 shows total orders. This allows us to see how frequently customers transact with the firm. Companies rarely disclose these data but having some sense of the numbers and trend is very useful.[37] Continuing with our examination of period 1, average orders per customer are 2.4 (19,288 ÷ 7,975 = 2.4).

The bottom panel captures total revenues. This tells us about average basket size, or dollar amount per order. In period 1, the average basket size is $46.39 ($894,813 ÷ 19,288 = $46.39). The number of orders times the basket size is the average revenue per user (ARPU), which comes out to $112.20 in this case. Total revenue of $894,813 is the result of 7,975 customers ordering 2.4 times with an average basket size of $46.39. We can monitor these levers to see how they change over time.

Exhibit 14 shows a customer cohort chart based on our example. Researchers at Theta Equity Partners point out a couple of virtues of a C3.[38] One is that the impact of new customers, the top part of the bar for each period, is easy to see. It also provides a way to see dollar retention by cohort, which is the change in total dollars spent by a cohort. Dollar retention is the net of countervailing forces: churn reduces revenues while an increase in spending per active customer boosts revenues.

Exhibit 14: Customer Cohort Chart (C3)



Source: Counterpoint Global.

This is a good time to revisit the important issue of customer heterogeneity. While CLV is often cited as a fixed sum, in reality there is often a great deal of variance around the average.[39] Indeed, customer behavior can be very skewed. One academic study found that the top 20 percent of customers generated 67 percent of the revenues for a sample of nearly 340 public companies.[40] Further, non-subscription businesses realized substantially higher revenues from their best customers than subscription businesses did. In general, the distribution of CLVs is lopsided, with most customers adding little value and a handful creating a lot.

The ideal is to calibrate the parameters that drive value to understand a company's value. These parameters include the rate and cost of customer acquisition, churn rate, order frequency, and basket size. The patterns of transactions are complicated for non-subscription businesses in large part because it is harder to observe and anticipate behavior. As a consequence, non-subscription businesses can be mispriced by the stock market and provide astute management teams with an opportunity to build value through customer-focused programs.[41]

Costs. So far, we have focused on a company's revenue potential, which considers a company's current and future customers and how much they will spend. But to calculate shareholder value we also need to account for costs.

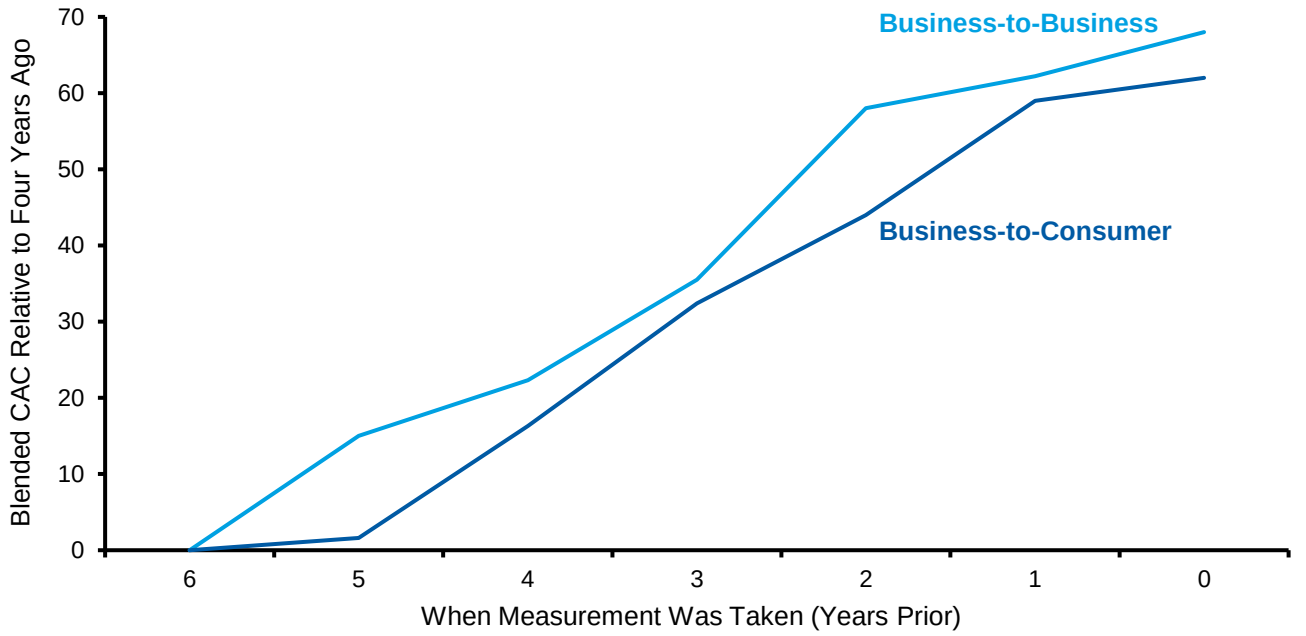
The most prominent of these is the customer acquisition cost (CAC), which can be linked to firm value.[42] Companies and investors commonly estimate CAC as sales and marketing expense divided by the number of new customers. For example, Netflix, Inc., which provides a subscription-based online video streaming service, had marketing expense of about $2.2 billion and acquired around 29 million customers in the 12 months ended March 31, 2021. CAC comes out to about $77.

This definition is simplistic and most certainly somewhat off the mark. On the one hand, it can overstate CAC because not all sales and marketing expense is dedicated solely to acquiring new customers. On the other hand,

customer acquisition costs come in many other forms, including freemium offerings (providing a service for free hoping to convince a customer to pay), hardware subsidies, promotions, and installation costs.[43]

CACs tend to rise over time as a company migrates from the early majority to the late majority adopters. This means that there are diminishing returns to acquiring customers, as with most economic activities. Exhibit 15 shows the upward trend in CACs for business-to-business and business-to-consumer companies.

Exhibit 15: Change in Customer Acquisition Costs Over Time



Source: Neel Desai, "How Is CAC Changing Over Time?" ProfitWell*, August 14, 2019.*

Empirical data shows that CACs also tend to be higher for industries with a large number of competitors than for industries with a small number. By contrast, retention cost per customer remains relatively stable whether the number of competitors is small or large.

CAC can decrease for a business that enjoys a network effect, which exists when the value of a good or service increases as more people use that good or service.[44] This can happen even as the willingness to pay (WTP), the most a customer would pay for a good or service, increases. Lower CAC and higher WTP generally occur only when one network becomes dominant. The business that controls the network benefits from economies of scale on the supply-side, where costs decline as a function of sales, and the demand-side, where WTP increases as a function of sales.[45]

Academics distinguish between a few kinds of network effects. Direct network effects exist when the participants can connect with one another without an intermediary. Telephone networks are the classic example. Indirect network effects exist when there's a complementary asset involved. Video game consoles and video games are a clear illustration. Network effects are also relevant for platform businesses that match two sides of a market. The ride-sharing companies are a good case in point.[46]

Going from revenue to shareholder value requires reflecting all costs (see exhibit 16). Variable costs vary with the level of output and include raw materials, packaging, and sales commissions. Fixed costs, such as rent expense and most labor, are not a direct function of the level of sales. Retention costs are a blend of variable

and fixed costs that are necessary to maintain current customers. Investment costs include spending on assets such as the working capital and property, plant, and equipment required to sustain or grow the business. The opportunity cost of capital captures the rate of return that investors demand.

Exhibit 16: Customer-Based Corporate Valuation Includes All Costs

Revenue	
– Cost of goods sold	Customer lifetime value commonly calculated using only these numbers
= **Gross profit**	
– Sales and marketing	Customer acquisition cost commonly calculated using sales and marketing spending
– Other selling, general, and administrative	
= **Earnings before interest, taxes, and amortization**	
– Cash taxes	
= **Net operating profit after taxes**	
– Investments • Δ net working capital • Capital expenditures – depreciation • Acquisitions – divestitures	Capital intensity
= **Unlevered free cash flow**	Figure to project and discount to present value

Source: Counterpoint Global.
Note: Amortization of acquired intangible assets added back to earnings before interest and taxes.

Most of the models that companies and analysts use fail to reflect all the costs necessary to properly estimate shareholder value. For instance, LTV/CAC calculations generally include only cost of goods sold and sales and marketing expenses. Research and development and other selling, general, and administrative (SG&A) expenses are rarely considered. Further, investments in working capital changes and capital expenditures are not part of most models.

These expenses and investments vary a great deal from one company to the next based on the type of business, position in the lifecycle, and the resource allocation skills of management. Accordingly, measures such as LTV/CAC may be useful for comparisons and as crude proxies for value, but lack the components to be deemed suitable for valuation.

Current accounting standards add confusion to the calculation of CBCV. Revenues and expenses appear on a company's income statement. But in recent decades, companies have invested increasing sums in intangible assets, which appear as an expense on the income statement.[47] Executives and investors can gain insight by capitalizing intangible expenses and amortizing them. This adjustment makes earnings and investments more accurate while free cash flow is unaffected.

Reconfiguring financial statements may lead to increased insight, but accountants and regulators generally frown upon the activity. In the late 1990s, the Securities and Exchange Commission (SEC) charged that America Online, Inc. (AOL), then the leading retail internet service provider, had violated generally accepted accounting principles by capitalizing and amortizing customer acquisition costs. For fiscal 1996, AOL's adjustment reduced pretax losses to $68 million from $175 million. The SEC charged that "AOL was operating in a new, evolving, and unstable business sector" and "could not provide the 'persuasive' historical evidence needed to reliably estimate the future net revenues it would obtain from its advertising expenditures."[48]

The SEC's interpretation of the accounting rules may have been correct, but AOL's accounting was a more accurate portrayal of the business. Very little has changed since that time, which means that companies and investors have to dig into the financial statements to understand the basic unit of analysis.

Geoffrey West, a theoretical physicist who was the president and is now a distinguished professor at the Santa Fe Institute, discusses the sigmoidal pattern of growth that applies to mammals and companies.[49] Consider an animal. Energy, via metabolism, is devoted to growth and maintenance. At birth, nearly all of the energy goes toward growth and little to maintenance. But as the body grows, the mix shifts from growth to maintenance until nearly all of the energy is devoted to maintenance. Growth finishes at the point of maturity.

Companies follow a similar pattern, with energy replaced by cost. For customer-based companies, growth is akin to acquiring new customers via customer acquisition costs and maintenance is keeping customers through retention spending.

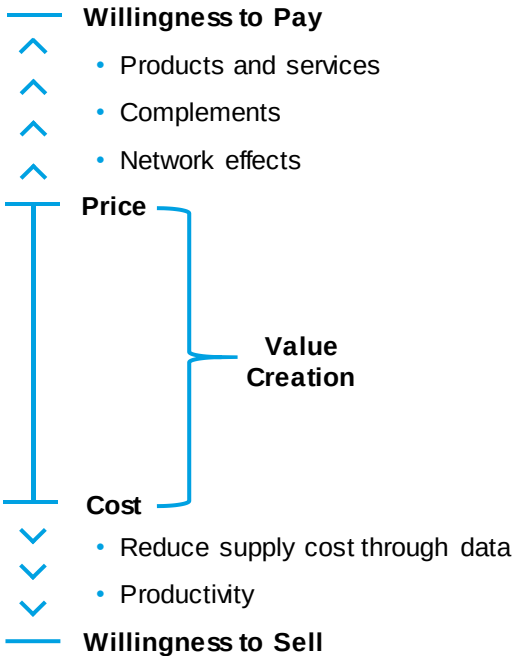
Companies that spend too little on acquiring customers in the growth phase limit their ultimate size, whereas companies that spend too much once mature waste resources. One study of retailers found those that continued to invest in new stores in pursuit of growth after diminishing returns had set in generated much lower returns to shareholders than those that recognized the limits to incremental spending. "Curing the addiction to growth" is essential to creating shareholder value.[50]

How Companies Add Value

Adam Brandenburger and Harborne Stuart, professors who study competitive strategy, have described a simple model of value creation from the point of view of buyers, the firm, and suppliers.[51] There are four numbers to consider. The first is willingness to pay (WTP), the maximum a customer would pay for a good or service.[52] The second is the price the firm charges for that good or service. The difference between WTP and price is consumer surplus. The third is the cost to the firm to deliver the product. The gap between price and cost is the firm's value creation. The final figure is willingness to sell (WTS), the minimum a supplier would accept to provide a good or service. Suppliers include employees.[53] Cost minus WTS reflects a supplier surplus.

Felix Oberholzer-Gee, a professor of business administration at Harvard Business School, enriches the Brandenburger and Stuart framework by providing specific methods to increase WTP or decrease WTS, hence providing the firm with an opportunity to create more value.[54] Exhibit 17 shows the framework and adds Oberholzer-Gee's observations about how to pursue a value-creating strategy.

Exhibit 17: How Companies Add Value



Source: Based on Felix Oberholzer-Gee, Better, Simpler Strategy: A Value-Based Guide to Exceptional Performance *(Boston, MA: Harvard Business Review Press, 2021), 14.*

Let's begin with willingness to pay at the top of the exhibit. Oberholzer-Gee suggests that companies should focus less on how to create more sales and more on how to delight their customers so as to increase WTP. This is important because the research suggests that higher consumer surplus leads to higher customer retention, hence linking directly to the calculation of CLV.[55] We briefly describe the levers he discusses to increase WTP:

- **Products and services.** Companies can increase WTP by earning a reputation of always placing the best interests of the customer first, reducing friction so as to create new opportunities, and considering carefully the needs of both the consumers and the intermediaries. Near customers are a group that has a WTP below the price of a company's offering. It is worth considering why these customers don't purchase a company's products and whether there are cost-effective ways to expand the total addressable market by gaining access to them. A central element of the theory of disruptive innovation is that there is a segment of the market that the incumbents are unwilling or unable to serve.[56]

  Reducing search costs is another way to boost WTP. Experiments show that recommendation engines, popular on e-commerce and video streaming sites, have an effect on WTP.[57] There is positive feedback between purchases and data. The more information a company has about purchase habits, the better it can customize recommendations, leading to further sales. Data about consumer preferences can be extremely valuable in an effort to lift WTP.

- **Complements.** A complement is a good or service that increases the WTP for another good or service. You see complements consumed together. Examples include smartphones and applications, printers and cartridges, and electric vehicles and charging stations. Companies that provide the product and the complements can still compete. In fact, they are "frenemies": friends because they know their businesses are more valuable together and enemies because they are competitive about how the value is divided. Companies enhance WTP if they can help lower or commoditize the cost of complements.[58]

Complements increase WTP and substitutes decrease WTP. But it's sometimes hard to tell the difference. One example is whether the digital form of a newspaper or magazine is a complement to, or a substitute for, the printed version. A marketer can gain insight into complementarity by studying the patterns of usage, examining the trends over time, and running experiments to sort cause and effect.

- **Network effects.** We already mentioned network effects in the discussion of CAC. Once a particular network becomes dominant, it shifts the demand curve up and increases WTP.[59] In cases where a company does not change the price of its good or service, consumer surplus increases. Some social media sites are free to consumers but generate revenues via advertising. In cases where network effects are present, the value of advertising mirrors WTP and the company can often monetize the gains because the companies auction the right to advertise.

  Some companies can create network effects by serving a subset of a broader group of potential customers. Dating sites that serve individuals of a particular religion, educational status, or vocation are examples. But executives and investors should be careful about network effects. Strong network effects are less prevalent than asserted, and many platform-based networks can suffer from an imbalance between the sides. For instance, you can imagine a dating website that has too many men and too few women, or the opposite situation.

The notion of WTP is relevant for all facets of customer lifetime value. Ways to capture near customers can increase the total addressable market. And increasing WTP creates the potential for pricing power, which lifts the value per customer, or generates consumer surplus, which leads to higher retention.[60] A decrease in WTP has the opposite effect. It trims TAM, weakens pricing power, and encourages churn.

We'll now drop down to the bottom of the exhibit and review WTS and cost. To start, it is worth noting that economies of scale, the idea that the cost per unit declines as output rises, is relevant for most industries. These include businesses such as semiconductor and automobile manufacturing. Size matters in many cases. Challengers face the daunting task of achieving minimum efficient scale, the smallest volume necessary to achieve unit costs that are competitive with the incumbents.

Companies want to maximize their value and often see reducing cost as a means to do that. Suppliers want to maximize their value, which is the difference between cost and WTS. These goals may conflict with one another.

What companies often overlook is the possibility that they can lower their own cost and preserve value for their suppliers by lowering WTS, the price at which suppliers are willing to sell. The situation goes from being zero sum to win-win. There a number of ways to assess the potential for decreasing WTS. Here are a couple:

- **Reduce supply cost through data.** Leading digital companies gather a substantial amount of data about their customers, including their preferences and purchase habits. Sharing this information can lower a supplier's WTS. Say a supplier today earns a 12.5 percent profit margin (net operating profit after taxes ÷ sales) and has 1.2x capital turnover (sales ÷ invested capital) for a return on invested capital (ROIC) of 15 percent (12.5% × 1.2 = 15.0%). Now let's assume that a company provides detailed data that help the supplier lower its invested capital, increasing its capital turnover to 2.0x. That supplier could now lower its product price to the equivalent of a 7.5 percent profit margin while still earning a 15 percent ROIC (7.5% × 2.0 = 15.0%). Even better, the supplier can lower the price to a 10 percent margin, which creates value for the firm and surplus for the supplier.
- **Productivity.** Our focus here is mostly on employees. There are two ways you can potentially create more supplier surplus, or employee satisfaction. The first is to pay them more. This redistributes value from the company to the employees unless there are offsets such as lower employee turnover. But the

bigger issue is that empirical studies have found the correlation between compensation and employee satisfaction to be weak.[61] By contrast, a culture that fosters intrinsic motivation can increase employee satisfaction by lowering WTS.[62] This is especially relevant for employees in creative fields where most day-to-day tasks cannot be prescribed by algorithms.

Good corporate cultures provide employees with intrinsic motivation.[63] The three components of intrinsic motivation are autonomy, mastery, and a sense of purpose. Autonomy is the feeling of being in control and includes elements such as options for which tasks to pursue, flexible hours, openness as to various techniques to solve problems, and the opportunity to work with a good team. Mastery means the job closely matches the employee's abilities with the opportunity to grow and improve. A sense of purpose is about serving a broader objective such that an employee's efforts contribute to a greater good. Employees who are intrinsically motivated require fair pay, but employers can create a lot of productivity and employee surplus by fostering a great culture. Indeed, 75 percent of millennial employees, those born from the early 1980s to the mid-1990s, said they would take a pay cut in order to work for a company that is socially responsible.[64]

Data also plays a role with employees. For example, service companies that understand product demand can match work schedules to staff appropriately. This saves the company money and makes employees happier. For example, research shows that the flexibility that Uber drivers have creates twice as much surplus as schedules that are less flexible.[65]

WTS is important for customer lifetime value because it relates to both price and cost. A company with happy employees is likely to provide its customers with a better experience, both encouraging customer adoption and fostering retention. Lowering WTS can be mutually beneficial to firms and their suppliers. A thorough assessment of CLV considers how companies add value and the creative ways that companies can increase consumer and supplier surplus along the way.

We now turn to a case study to make this analysis more concrete.

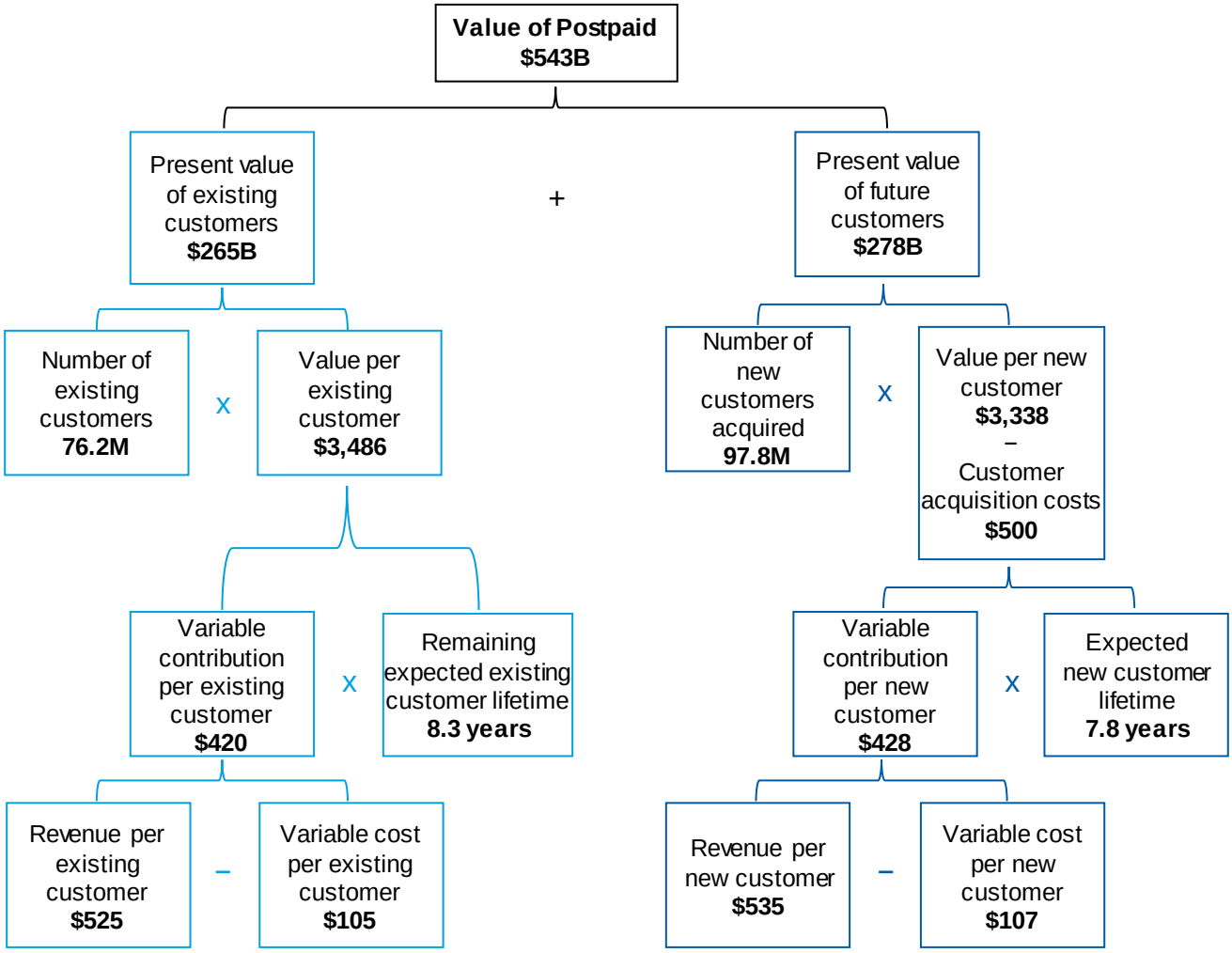
Case Study – AT&T Mobility

Dan McCarthy, one of the progenitors of customer-based corporate valuation, started his career as an investment analyst. This means that he understands how to model the value of a business. In late 2020, he shared a case study of AT&T Mobility, a leading provider of wireless telecommunications in the United States.[66] This division makes up the majority of AT&T's enterprise value. AT&T Mobility has postpaid and prepaid businesses. We focus on the postpaid business, which is the bigger of the two.

Exhibit 18 closely mirrors exhibit 1 but fills the boxes with the appropriate figures. McCarthy's analysis suggests a value of the business of $543 billion, which excludes a number of costs. The value is closer to $200 billion after all costs, taxes, and investments are considered.

We see immediately that the value of the business is split roughly equally between the present value of existing customers and the present value of future customers. This breakdown of value reflects where a business is in its lifecycle: the value for companies early in their lifecycle is concentrated in future customers and the value for companies late in their lifecycle is predominately in existing customers.

Exhibit 18: Bottom Up Value of AT&T Mobility's Postpaid Business



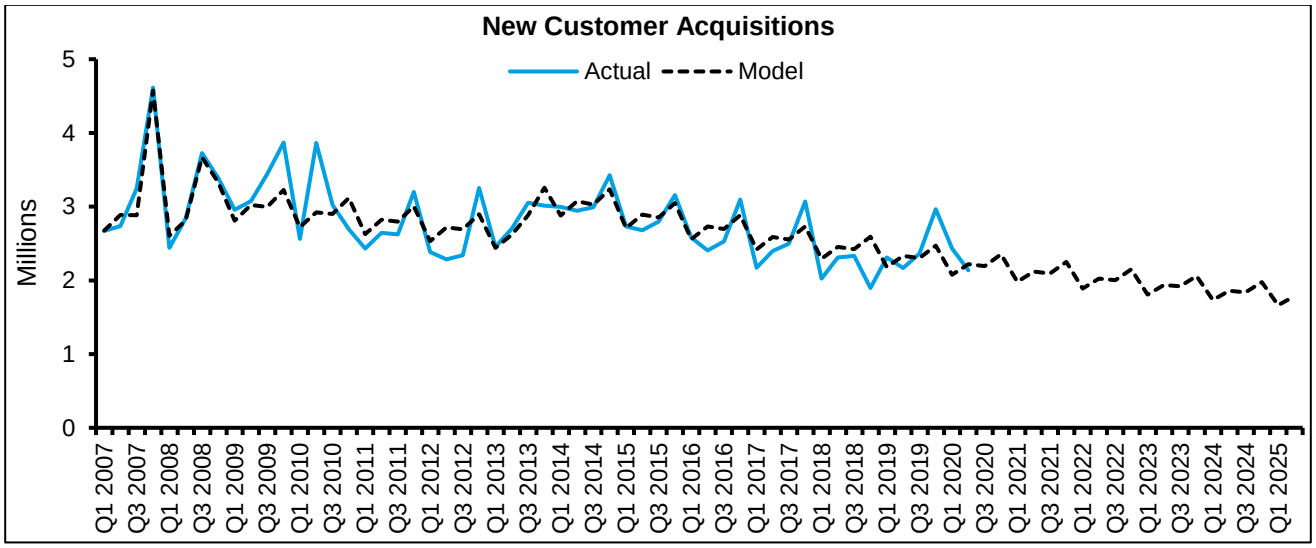
Source: Dan McCarthy, "Break the Short-Term Earnings Trap," Bain & Company Webinar*, November 2020.*

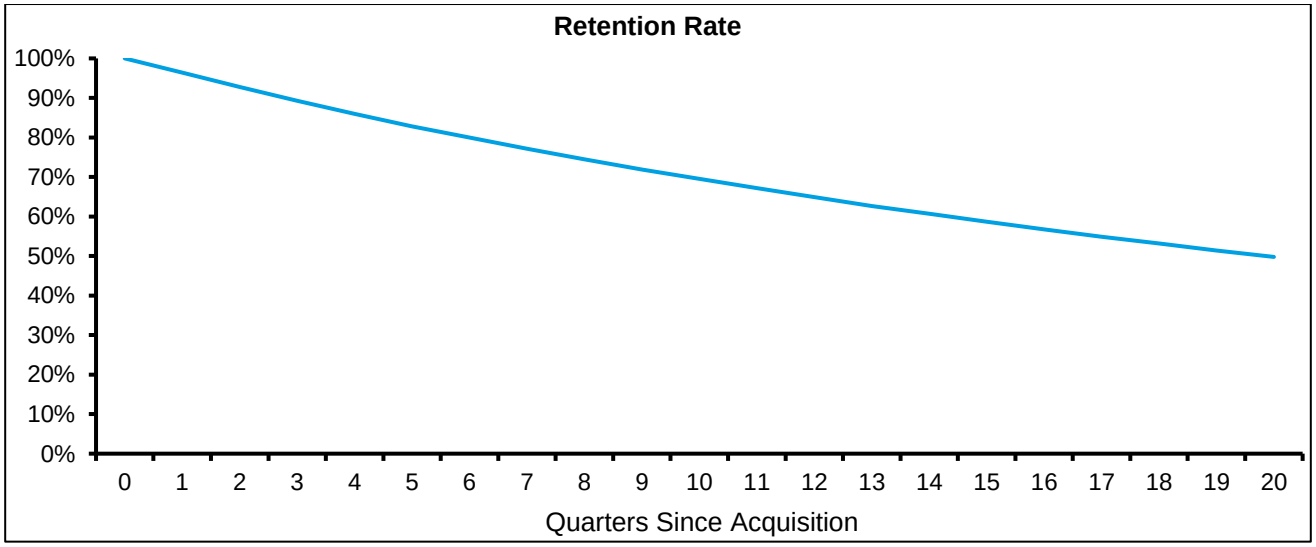
The value of the current customers of $265 billion is the product of 76.2 million customers and a value per customer of $3,486. That value per customer, in turn, reflects an annual variable contribution, a proxy for earnings, of $420 times the average expected life of the customer of 8.3 years. Finally, the variable contribution is simply revenue minus variable cost. The model assumes that variable costs are 20 percent of sales.

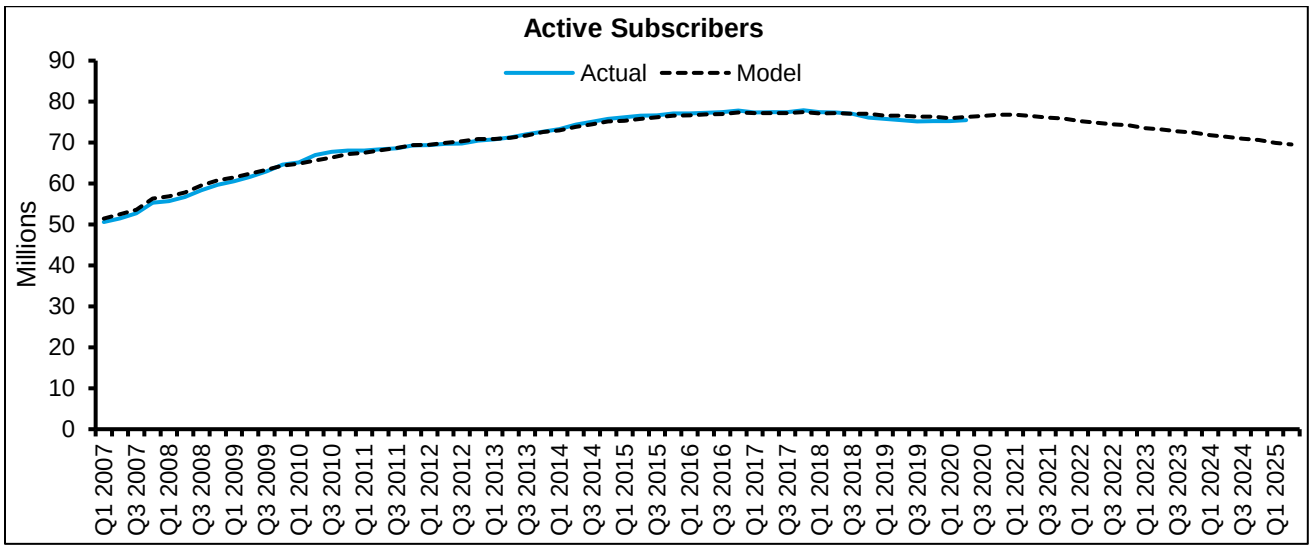
One of CBCV's most important contributions to the valuation literature is a robust way to forecast revenue growth. The number of future customers and how much they will spend are the main determinants of overall revenue growth. We'll start with the number of customers.

Exhibit 19 shows the relevant drivers of customer growth. The panel on the top starts with the actual number of new customers. McCarthy uses statistical models, with parameters that fit the data, that allow him to make a forecast of new customers in upcoming years. The middle panel assumes a simple retention rate that allows for a projection of active customers. The customer homogeneity implied by the retention curve is unusual but fits the data. The panel on the bottom is an estimate of total active subscribers based on a combination of existing and future subscribers.

Exhibit 19: Bottom Up Model of AT&T's Postpaid Customers



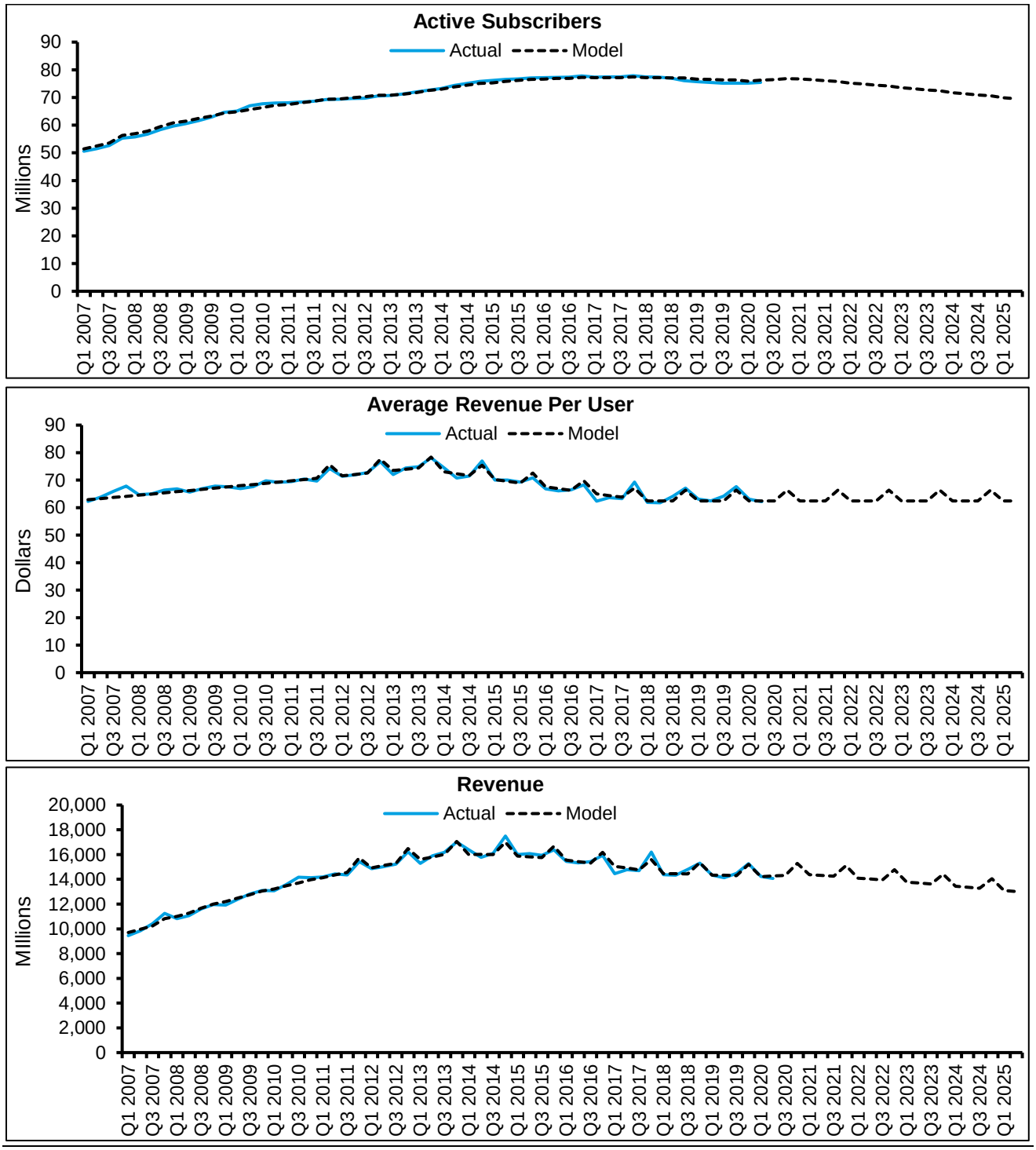




Source: Dan McCarthy, "Break the Short-Term Earnings Trap," Bain & Company Webinar, *November 2020.*

The next step is to translate the number of customers into revenues. Exhibit 20 shows the process. The top panel starts with the active subscribers, building on the prior analysis. Because this is a subscription business, we don't have to worry about order frequency and can move directly to average revenue per user (ARPU). The history and forecasts for that figure are in the middle panel. On the bottom is total revenues, which is the product of the number of customers and the ARPU.

Exhibit 20: Bottom Up Model of AT&T's Postpaid Revenues



Source: Dan McCarthy, "Break the Short-Term Earnings Trap," Bain & Company Webinar*, November 2020.*

The values of the current and future customers are similar but there are some noteworthy differences in how they are determined. First, this analysis suggests that the number of present customers, 76.2 million, is less than the number of potential future customers of 97.8 million. (Some past or current customers that churn may be included in the sum of future customers.) The ratio between present and future customers needs to be viewed in the context of market size, competition, and the age of the offering.

Second, the value per new customer is modestly lower than that for existing customers, but acquiring new customers requires a customer acquisition cost. The CAC of $500 reduces the value per new customer to $2,838, nearly 20 percent below that of existing customers. As companies move through the various adopter categories, it is common for CAC to drift up and the value per new customer to drift down.

Finally, this model assumes that new customers will generate slightly higher ARPU but will stay for a shorter period. Recall that retention is often higher for seasoned cohorts because the least loyal customers have already churned and those left are among the most loyal.

In this case, McCarthy models only the variable costs. When he considers all costs and the cash flows are discounted to a present value, the net value per customer is 35-40 percent of what exhibit 18 shows and value of this business is around $200 billion. This is consistent with the sum-of-the-parts analysis by investors in the financial community.

While this analysis based on quality inputs and a sound model, it is important to recognize the probabilistic nature of the forecasts and the limitations of the model. As a consequence, sensitivity analysis is required to understand the impact that different assumptions have on value. It is very important to consider each variable in the context of the whole model.

Trade-Offs and Sensitivity Analysis

Customers, revenues, and costs are the core drivers in the CBCV model. It is essential to consider how they interact when assessing how various assumptions affect value. Specifically, there are trade-offs between the drivers. For example, a price increase grows cash flow but raises the churn rate. A price drop shrinks cash flow but lowers the churn rate. A focus on new customer acquisition increases the number of customers but raises acquisition costs. A focus on retaining current customers lowers churn but increases retention costs.

The key to sorting through these possibilities is to do sensitivity analysis and to run scenarios. For example, in January 2019 Netflix raised the price of its basic service 13 percent, its standard service 18 percent, and its premium service 14 percent. TDG Research asked 469 users what they would do if the price went up and found 10 percent said they would downgrade to a cheaper plan and 12 percent said they would cancel the service outright.[67] Essentially the increase pushed the price above the willingness to pay for a subset of customers.

People may not do what they said they would do in a survey. But modeling the potential revenue and profit increases from remaining customers and offsetting them with a loss of customers can help measure the impact on value. As an illustration, assume a company has 1,000 customers with a current CLV of $500. The firm decides to raise prices, lifting the CLV to $600 for those customers who remain. The company comes out ahead if it loses fewer than 166 customers ($600 $\times$ [1,000 – 166] $\approx$ $500,000). The trade-off is between the size of the price increase and the number of customers who defect. Likewise, a company that lowers its price can expect to keep more customers or add new ones at a faster clip.

Another trade-off is between spending money to acquire new customers and retaining existing ones. Marketing researchers point out a handful of mistakes that companies make when faced with this decision.[68] The first is failing to consider the law of diminishing returns when assessing how much to spend on acquisition and retention. The problem is that both must be considered on the margin, and the marginal cost and benefit is likely to be less compelling than the average of the past.

Another mistake is dwelling too much on short-term versus long-term metrics. Some customers, for example, are relatively inexpensive to acquire but expensive to retain. Acquiring this group looks good in the short run but impedes long-term profitability. Other customers are expensive to acquire but cheap to retain. They appear costly in the short term but create a lot of value in the long run.

The third mistake is treating acquisition and retention strategies separately, rather than integrating them into a framework to maximize long-term value. When different groups within a company focus on acquisition and retention, they can make decisions at cross-purposes. Indeed, companies with generous marketing budgets often overspend on both strategies.

The final mistake is overlooking selection bias as the result of survivorship. If a company relies too much on the data from its current customers, it is drawing inferences from a sample that is not representative of potential customers.

These marketing researchers built a statistical model to assess the trade-off between acquisition and retention spending that considers these potential pitfalls. Exhibit 21 shows one of their simplified case studies based on a pharmaceutical company. The columns are various levels of retention spending, the rows are acquisition spending, and the figures in the table are the average customer profitability based on the combinations.

Exhibit 21: Quantifying the Trade-Off Between Acquisition and Retention Spending

		Retention Spending				
		$40	$50	**$60**	$70	$80
Acquisition Spending	$1	$1,423	$1,543	$1,583	$1,543	$1,423
	$5	$1,437	$1,557	$1,597	$1,557	$1,437
	$10	$1,443	$1,563	**$1,603**	$1,563	$1,443
	$15	$1,437	$1,557	$1,597	$1,557	$1,437
	$20	$1,418	$1,538	$1,578	$1,538	$1,418

Source: Jacquelyn S. Thomas, Werner Reinartz, and V. Kumar, "Getting the Most out of All of Your Customers," Harvard Business Review*, Vol. 82, No. 7-8, July-August 2004, 116-123.*

Companies and investors can do a better job assessing CLV than they do today. But the main point of this discussion is that the drivers are dynamic and interactive.[69] A holistic view is necessary to assess the path of the CLVs for a company.

Common Errors

We covered a lot of analytical terrain. It is worth taking a moment to highlight common errors that we see in the analysis of CLV:

- **Assuming stable churn.** Retention rates generally follow a curve, and the average of a cohort can lead to an improper valuation. Further, retention rates can vary from one cohort to the next, making too much reliance on past averages troublesome.
- **Assuming customer homogeneity.** The types of customers that engage with a company tend to change over time as the result of factors such as which adopter category they are in and competition. Further, the economic value created by current customers tends to be very skewed as a small percentage of customers create a large percentage of value.
- **Assuming CAC does not change.** Companies always have to think about CAC for the next customer. In general, CAC tends to rise because the most enthusiastic people become customers early and the more skeptical customers are converted later. The exception to a rising CAC is when network effects are sufficient to make one business dominant. For these types of businesses, spending on CAC is high and rising until the business reaches a tipping point and becomes the de facto standard. Then incremental CAC declines sharply.
- **Failure to discount future cash flows.** Some companies and investors present future cash flows without discounting them to a present value. This has the obvious effect of overstating customer lifetime value.
- **Failure to model all the way from sales to shareholder value.** Blunt measures such as LTV/CAC (customer lifetime value ÷ customer acquisition cost) fail to reflect meaningful determinants of shareholder value, including taxes and investments. The virtue of customer-based corporate valuation (CBCV) is that it considers all of the drivers of shareholder value.

We should also note that while customer-based corporate valuation is a powerful way to value a business, corporate disclosure is very inconsistent.[70] Companies leave out key data, define terms in various ways, or even provide misleading figures. Transparency about the drivers of customer value has improved but has a ways to go.

Conclusion

Companies and investors can consider the customer as the basic unit of analysis in understanding value. The rise of digitalization in the economy has allowed companies to gather unprecedented amounts of data on their customers and their behavior, permitting an assessment of overall value based on granular statistics. The concept of customer lifetime value (CLV), driven by customers, sales, and costs has been around for more than a quarter century. That work was led by professors of marketing and consultants.

These tools are extremely valuable, but areas of potential improvement remain. The first is the introduction of more sophisticated statistical models to predict revenue through customer acquisition, churn rate, purchase frequency, and basket size. The second is a reckoning for all costs that allow the model to go from revenue to shareholder value.

Customer-based corporate valuation (CBCV) improves on the classic model by filling in those gaps. The work combines foundational work from marketing and finance to provide companies and investors with the tools to make informed decisions.

We discuss the key elements of CBCV, including customers, revenues, and costs and show how to model them using a cohort model. The accuracy of the inputs varies based on the information companies share and whether the business is based on subscriptions or non-subscriptions. But in any case, a thorough understanding of the model prompts the right questions.

A company's value creation opportunity can be framed by the concept of willingness to pay and willingness to sell. We review some strategies companies can pursue to create consumer or supplier surplus. The important point is these strategies can avoid actions that are zero sum, where the company benefits at the expense of its customers or suppliers. This work also reveals the existence of near-customers and provides companies with a way to think about accessing that group to increase the total addressable market.

A case study of AT&T Mobility shows how these concepts work. The model parameters are tuned to get a very good fit with past results and to provide confidence in the forecasts. The case does not go down to shareholder value because it focuses on a division of AT&T. But we know that sales growth is commonly the most important value trigger.

Finally, this discussion is incomplete without recognizing that companies have to make trade-offs as they allocate corporate resources. Drivers such as price and churn, and new customer acquisition and customer retention, can have countervailing effects on value. Companies and investors have to assess those trade-offs and do proper sensitivity analysis to fully understand the implications for value.

Notwithstanding large strides in improving our understanding of CLV, companies and investors still make some basic errors. It is useful to bear in mind that shorthands are generally effective at saving time but also come with blind spots. The key is to dig deep enough to understand the fundamental drivers of value.

Appendix: Financing Software as a Service Businesses

The potential growth of software as a service (SaaS) businesses is affected by countervailing forces. On the one hand, the digital nature of the service means that the companies can grow rapidly. On the other hand, many subscription businesses have high upfront costs and customer cash flows that take years to pay off. That means that fast growth, even for businesses with excellent customer economics, requires a lot of capital in the short run.

SaaS companies have a few ways to access the necessary capital. The first is through raising debt or equity. Many of these companies seek additional equity because they are young. Venture capitalists and growth equity investors are the natural providers of this capital. The concern is that raising additional equity capital dilutes the founders and early investors, leaving them with a smaller percentage ownership of the firm. Of course, such a capital raise is desirable if the new capital adds more value than it causes in dilution.

Another alternative is stock-based (SBC) compensation. Here, the company pays its employees using various forms of equity including restricted stock units, performance stock units, and employee stock options. SBC is basically two transactions in one. In the first the company sells shares, a form of financing, and in the second it compensates its employees for their service. You can think of SBC as the equivalent of the company selling stock to outside investors and using the proceeds to pay employees.

Accountants reverse the expense for SBC when they calculate the cash flows from operations on the statement of cash flows. We calculate that SBC represented 50 percent of the $25.6 billion in cash flow from operations in 2020 for the top 50 SaaS companies as measured by market capitalization.[71] Said differently, cash flow from operations would be one-half of what the companies reported, with an offsetting increase in cash flows from financing activities, if SBC were removed.

A new means to access capital has emerged recently. For example, Pipe is a finance company that advances cash against annual recurring revenue (ARR). SaaS companies commonly sign multi-year deals but boost their short-term cash flows by offering their customers a discount to pay upfront. Pipe evaluates a SaaS company's main metrics and, if it qualifies, helps match the company with an investor that is willing exchange cash (90-95 percent of annual contract value, on average) in return for the cash flow. The SaaS company can then use that cash to pursue additional customers. Assuming the SaaS company is allocating capital well, this financing mechanism circumvents the need to raise debt or equity capital.[72]

Risk and expected reward for an investor is a function of the order in which capital providers get paid. Equity capital has the highest risk and reward because it is a residual claim, which means that all other capital providers are satisfied first. Debt has a lower cost than equity because debt holders get paid before equity holders and are senior in the capital structure. Claims on revenues are the least risky because they are first in line.

Swapping ARRs for cash makes sense for companies and exiting investors if the proceeds are deployed well. But there is no free lunch. Equity investors should acknowledge that the introduction of a party that has claims on revenues increases the risk for the other capital providers.

Please see Important Disclosures on pages 36-37

Endnotes

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Platform	Average WTP	Average WTA	Ratio of WTA/WTP
WhatsApp	$34.90	$101.16	2.9
Reddit	27.73	97.73	3.5
LinkedIn	25.71	97.80	3.8
Snapchat	24.92	106.20	4.3
Instagram	21.67	102.60	4.7
Pinterest	20.97	102.92	4.9
Twitter	19.94	104.18	5.2
YouTube	17.27	90.78	5.3
Facebook	16.99	89.17	5.2

That the WTA is roughly three to five times higher than the WTP is evidence of the endowment effect, the idea that people place a greater value on what they own than what they do not own. Indeed, the size of the ratio compelled Sunstein to call it a "superendowment effect." See Cass R. Sunstein, *Too Much Information: Understanding What You Don't Want to Know* (Cambridge, MA: MIT Press, 2020), 138-141.
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