

## The lifetime value of a Land Line Phone Subscriber

Lifetime value is a key method of determining the value of a telecom subscriber, and of evaluating the strategies used to market to these subscribers. Here is what a LTV table looks like:

Land Line Customer		Acquisition Year	Year 2	Year 3
Customers		200,000	178,640	159,990
Churn Rate		0.89%	0.87%	0.85%
Retention Rate		89.3%	89.6%	89.8%
ARPU		\$41.00	\$41.50	\$42.00
Revenue		\$98,400,000	\$88,962,720	\$80,634,952
CCPU - Cash Cost per User	\$26.00	\$62,400,000	\$55,735,680	\$49,916,875
CPGA - Cost per gross add	\$150.00	\$30,000,000		
Total Cost		\$92,400,000	\$55,735,680	\$49,916,875
Gross Profit		\$6,000,000	\$33,227,040	\$30,718,077
Discount Rate		1.00	1.16	1.35
Net Present Value Profit		\$6,000,000	\$28,644,000	\$22,754,131
Cumulative NPV Profit		\$6,000,000	\$34,644,000	\$57,398,131
Lifetime Value		\$30.00	\$173.22	\$286.99

In this table we are looking at a group of 200,000 newly acquired landline phone customers for a company we can call BellTel. We will examine their performance over a three-year period. There are, of course, many additional customers of this particular telephone company. We are not looking at them in this chart.

### A:// Definition of terms

You will notice some new terms in this table. Here are some brief definitions:

**Lifetime Value (LTV)** is the net present value of the profit that you will realize on the average newly acquired customer during a given number of years. Lifetime value can be used in the development of marketing strategy and tactics. At any given time LTV is a specific number, but it will change from month to month. Many different things cause lifetime value to change, some of which are under your control, many of which are not. It is computed by adding the cumulative net present value of all profits received from a given number of new customers and dividing that total by the original number of customers acquired. In this table, we are dividing by 200,000.

**Cash Costs per User (CCPU)** calculates the cash cost to operate a telecom business on a per subscriber basis. It permits the comparison of one telecom's subscriber costs to other telecom providers including telephone, cable, wireless and satellite companies. In addition to direct subscriber costs, CCPU includes the costs of incoming calls. CCPU does not include non-cash compensation or depreciation, asset disposal or amortization. CCPU is used in the wireless industry. Few land line phone companies report CCPU on

their annual reports, so we have created a number for the purpose of this chart. The CCPU counts the marginal cost of adding one subscriber. It considers all the lines, poles, switching stations and maintenance personnel as sunk costs that do not have to be born by each new subscriber.

**Cost per Gross Addition (CPGA)** quantifies the costs to acquire a new subscriber. CPGA is used to compare average acquisition costs per new subscriber with similar costs of other telecom providers. CPGA is calculated by dividing the number of subscribers acquired in a given period into sum of the out of pocket cost of the equipment and labor used for adding the new subscribers plus the selling expenses related to adding the new subscribers. CPGA is included in typical wireless company annual reports, but not in wire line annual reports.

**Average Revenue per User (ARPU)** measures the average revenue generated per telephone user. ARPU is also used in the telecommunications industry to report the amount of revenue generated per cell-phone or cable TV user per month. ARPU is used to compare various companies, as well as internally to spot lagging product lines.

**Net Present Value (NPV)** of future revenue or profits is determined by dividing the expected revenue by a discount rate that reflects the interest which that revenue would have earned if we had the revenue in hand today. We will cover NPV in more detail later in this chapter.

**Discount Rate** This term is explained in detail later in this chapter.

### **Why these terms are important**

There is a telecom revolution going on today. Companies from five different industries (Phone, Cable, Wireless, Satellite and Electric Utilities) are beginning for the first time in history to offer almost identical products to consumers. These products, of course, are wired and wireless phone service, broadband, video and television. We are going to see what each company can do to improve their competitive position, to increase sales, and to reduce churn. Since each of these companies will be selling the same products to the same group of US consumers, we have to have a universal way to compare their marketing methods. Using these terms helps us to do this. These terms, such as ARPU, CCPU and CPGA, have been used mainly for wireless or cable industries, but they will be used in this book for all telecom industries.

### **A:// How long is a customer lifetime?**

This diagram looks at three years of the life of 200,000 newly acquired customers. Why three years? For one reason, it is easier to understand customer performance over a three year period. For another reason most customer cycles don't extend to eight or ten years. If a large number of customers lasts as long as that for your business, you should create such charts. There is a simple formula, provided by Roger Entner that tells you how long in months your customers generally stay with you. It is:

Lifetime of a subscriber in months = 100 / monthly churn.

For example, if the churn rate is 0.8% then

Subscriber Lifetime = 100 / 0.8 = 125 months or 10.4 years.

### **The Churn Rate and Retention Rate**

Note that of the 200,000 customers who were acquired in Year 1, only 178,640 of them were still connected to a BellTel land line in the second year. That means that the BellTel retention rate in the first year was 89%. The retention rate is the single most important number in a lifetime value table because it measures customer churn. Also it is something that you, as a telecom marketer, can modify by your marketing strategy and tactics. This annual retention rate is the result of a monthly churn rate of 0.89%.

The retention rate is easily calculated from the monthly churn rate by a simple formula:

$$RR = 1 - (\text{Monthly churn rate} \times 12)$$

$$RR = 1 - (0.0089 \times 12)$$

$$RR = 89\%$$

Note that the churn rate goes down in year 2 and further in year 3 because many non-loyal customers left in Year 1 and Year 2. Those who remain are more loyal and stable. Thus the base of loyal customers is a larger percentage of the whole. This always happens, and you can count on it. The retention rate goes up for people who have been with you for some time.

What about new customers who sign up for a phone in the second year? We can develop an LTV table for them. Year 2 (on the table) is their acquisition year. In your table, you don't need to select 200,000 as your group for study. You could select 1 million or 59,102, or any number that you might have in a database. The only requirement is that we are taking snap shots of the performance of a specific group of consumers over their first several years as a customer. Later, we will be developing the lifetime value of customer segments, not of all customers, as we are doing here. For now, however, let's stick with looking at all the customers in the database who were acquired together, to see what we can learn about them.

What do we do with lapsed customers who did not buy in Year 2, but came back in Year 3? They are in there. They are part of the 159,990 of the original 200,000 who have phones working in Year 3. The fact that some lapsed customers may be reactivated leads companies to keep these customers on their books for a couple of years. There is always hope. Of course, since they are on our customer database, we will have to keep track of them and send them occasional messages.

### **Landline ARPU**

In the table above ARPU (average revenue per unit) stands for average *monthly* revenue. In this case, the unit is the customer. Some customers have more than one line. Some make a lot of long distance calls. Some have call waiting, call forwarding, voice mail, caller ID, and other premium services. In this chart we have put them all together into an average monthly revenue per customer of \$41.00. You will note that the ARPU goes up in year 2 and year 3. That is also normal. People who have been with you for a while are more likely to sign up for additional services or use their phone more often.

The total revenue is computed by multiplying the ARPU times the number of customers, times 12.

## **Profits**

The gross profit, of course, is simply the revenue minus the costs. There is one number that you may not be familiar with. It is the Discount Rate.

## **The Discount Rate**

The reason why we need a discount rate is simple: the revenue (and, eventually, profits) you receive from your customers comes in over several years. Money received in future years is not worth as much today as money received today.

How much should you discount future revenue? There is an easy answer: you use the market rate of interest. As I write this today, 7% seems like a reasonable market interest rate. Ten years ago, 12% was what businesses were paying. The amount varies with the general market conditions. Use a number that corresponds with your current situation. In this book, 8% is used throughout.

In reality, however, I am doubling that 8% to get 16% to reflect risk. In any long-term business transaction, like lifetime customer value, there is always a serious risk. What are the risks?

- Interest Rates could go up.
- Obsolescence. Your product could become obsolete in the next few years, and wipe out your expectation of further sales. This is happening in landlines right now.
- Competition. In most industries, competitors always make marketing a risky business. They could steal your expected customers. Landline customers are being stolen by cable TV companies, by wireless companies, and by VoIP companies.
- Other business risks. In each business situation, there is many a slip twixt the cup and the lip. The landline phone business is no exception.

For these reasons, in this example, I have doubled the interest rate to get the discount rate. The risk factor (rf) is two. You may be able to develop more sophisticated risk factors, based on your business history.

### **Computing the discount rate from the interest rate**

Once you have decided on a market interest rate, you need to compute the discount rate that applies to amounts to be received in each year, using a simple formula:

$$D = (1 + (i \times rf))^n$$

Where D = Discount rate, i = interest rate, rf = the risk factor, and n = number of years that you have to wait. The discount rate in Year 3, for example, (two years from now) is computed:

$$D = (1 + (.08 \times 2))^2$$
$$D = (1.16)^2 = 1.35$$

It is possible to be much more precise in your discount rate calculation. For example, will you be paid in several weeks or months, on the average. This is a typical concern in most business-to-business operations. In this case, we can make "n" into a fractional amount, like 3.25.

### **Net Present Value (NPV) Profits**

Once you have the discount rate, each of your expected profits must be discounted so as to arrive at the Net Present Value of these future profits. The process is a simple:

$$\text{Net Present Value (NPV) Profits} = \text{Gross Profits} / \text{Discount Rate}$$

The Net Present Value of the \$30,718,077 profits expected in Year 3 is \$22,754,131, which is the result of dividing \$30,718,077 by the discount rate of 1.35.

### **Cumulative NPV Profit**

Now, add together the net present value of all the profits in the present year, and each previous year. The net present value of profits realized by the third year, for example, is equal to sum of the net present value of the profits in the Acquisition year + Year 2 + Year 3.

### **Lifetime Value**

The lifetime value is simply the Cumulative NPV Profit in each year, divided by the original group of customers (in this case 200,000).

In other words, the NPV lifetime value represents the average profits you can expect to receive, after a given number of years, from the average new customer that you can sign up today. The lifetime value of the average new customer for BellTel in the third year is \$286.99:

$$LTV = \text{CUM-NPV} / \text{Acquired customers} = \$57,398,131 / 200,000 = \$286.99$$

This is a very important number. It can be used to develop your entire marketing strategy. We will be using this number throughout this book. Built into this number are all of the other numbers in the LTV table: the churn rate, retention rate, ARPU, CPGA, CCPU, marketing costs, and the discount rate.

### **Alternate Lifetime Value Calculation Method**

Roger Entner, a recognized expert in Telecom lifetime value uses a formula to determine the correct value. His formula is:

$$NPV = -CPGA + \sum_{t=1}^n (ARPU - CCPU) \frac{1}{(1+r)^t}$$

CPGA = Cost per Gross Add

ARPU = Average Revenue per User

CCPU = Cash Cost per User

r = Interest rate

n = Number of months in the subscriber's lifetime with you

Using this formula for an interest rate of 8%, the lifetime value of a newly acquired customer in the third year that cost \$200 to acquire, and had an ARPU of \$50, with a CCPU of \$35 and a monthly churn of 0.89% would be computed as follows:

$$\text{Lifetime Months} = 100 / 0.89 = 112.4$$

$$8\% \text{ per year} = 0.66\% \text{ per month}$$

$$1 / (1+r)^n = 1 / (1.0066)^{112.4} = 0.447399$$

$$ARPU - CCPU = \$15$$

$$NPV = -\$150 + 112.4(\$15)^{0.447399}$$

$$NPV = -\$150 + \$409.48$$

$$NPV = \$259.48$$

Depending on your perspective, this is close enough (or not) to the \$286.99 in the LTV table shown earlier.

Copyright 2007 by The Database Marketing Institute, Ltd.