Interpreting Retention Statistics and Customer Lifetime Value: A Tutorial

Customer lifetime value (CLV) is calculated as the net present value of expected future cash flows over the lifetime of an individual customer. The equation (shown below) explicitly accounts for customer churn or turnover by adjusting the cash flow for each time period by the probability that the customer will be retained (r):

$$CLV = \sum_{t=1}^{T} \frac{(GM_t)r^t}{(1+d)^t}$$

GM_t = gross contribution margin per customer in time period t
r = retention rate
d = discount rate
t = a time index (e.g., a quarterly time index)

Calculating Customer Lifetime Value

The steps in calculating CLV are as follows:
1. Determine annual profit (or cash) flow pattern for customers over time.
2. Establish customer defection/retention pattern.
3. Calculate customer NPV using firm's discount rate.
It is preferable to calculate CLV using gross contribution margin per customer in the numerator. However, in some instances, firms have difficulty assigning their costs to specific customers, so gross contribution margin per customer is replaced by revenue per customer.

Different market segments may have very different cash flow characteristics (that is, different gross contribution margins and retention rates). Hence, it is useful to calculate CLV separately for the typical customer in each market segment.

Interpreting Customer Lifetime Value

The CLV framework is a useful way of thinking about managing customer relationships to maximize shareholder value. From a managerial standpoint, there are three ways for a company to increase aggregate CLV (and consequently shareholder value) next year: (1) Acquire new customers; (2) Increase retention of existing customers; or, (3) Increase gross margin (through cross-selling or changes in cost-structure, for example).

Firms generally consider customers with a high CLV to be most attractive and – if these customers perceive the firm's product to have a high value – it will be profitable for the firm to invest in marketing to them. Firms generally undertake defensive strategies to retain customers with a high CLV who do not perceive the firm's product to have a high value because they are vulnerable and may be lost to competitors.

Recent research has shown that the CLV framework (i.e., using forecasts of acquisition, retention, and margins) can be used to calculate the value of the firm's current and future customer base. Gupta, Lehmann and Stuart (2004) used publicly available information from annual reports and other financial statements to calculate a customer-based valuation of five companies. They

compared their estimates of customer value (post-tax) with the reported market value for each of the companies. Their estimates were reasonably close to the market values for three firms, and significantly lower for two firms (Amazon and eBay). They inferred that these two firms are either likely to achieve higher growth rates in customers or margins than they forecast, or they have some other large option value that the CLV framework doesn't capture.

Sample Customer Lifetime Value Calculation

An auto dealership tracks customers who use its service facility. New customers represent $50 in 1st-year margins, $100 in 2nd-year margins, $125 in 3rd-year margins, and $100 in margins in subsequent years. The dealership estimates that customers defect at a rate of 20% per year. That is, only 80% of new customers continue to use the automobile dealership's services in the second year, only 60% of new customers continue to use the automobile dealership's services in the third year. etc. Assume the firm's discount rate is 20%. We can calculate the CLV for the average customer as follows:

$$CLV = 50/1.20 + (100 \times 0.80)/(1.20)^2 + (125 \times 0.60)/(1.20)^3 + (100 \times 0.40)/(1.20)^4 + (100 \times 0.20)/(1.20)^5$$
$$= \$167.96.$$

Suppose the auto dealership was able to reduce customer defections from 20% to 15% per year. Then, CLV for the average customer would be $205.10. Thus, a 5% reduction in the rate of customer defections (a 5% increase in the customer retention rate) increases profitability by 22.1%. Note that, in this example, we discount cash flows back to "year 0" and assume there was no acquisition cost at year 0.