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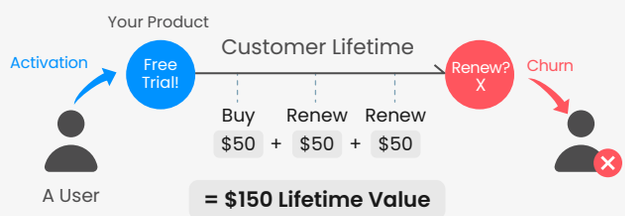
The SaaS LTV Cheat Sheet

What is LTV? Customer Lifetime Value (LTV) is equal to the average revenue that a customer generates before they churn (cancel), offset by gross margin.

In SaaS businesses, this is almost always a forward-looking estimation, rather than measurement of historical data.



How can LTV be useful?

Balancing acquisition spend: If I know my LTV is 'X', I can confidently spend 'Y' to acquire them without much risk.

Determining payback period: How long does it take for a customer to "pay back" their acquisition cost? The longer this is, the more risk there is tied up in the business.

The "basic" LTV formula

This basic formula for LTV is commonly accepted as a useful starting point for estimating the LTV of SaaS customers:

$$LTV = \frac{ARPA \times Gross\ Margin}{Customer\ Churn\ Rate}$$

ARPA: Average Revenue Per Account - the average MRR across all of your active customers.

Gross Margin: The difference between revenue and Cost Of Goods Sold (COGS). This is typically very high in SaaS, e.g. >80%

Limitations of the basic formula

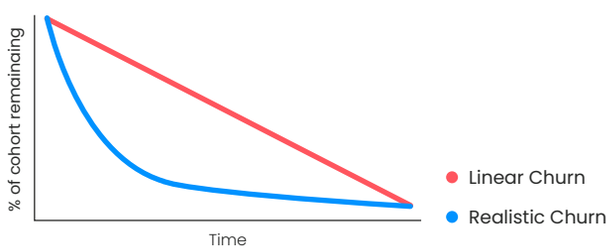
Assumes linear churn over time. This is never usually the case with most SaaS businesses, who typically see most churn early on in the subscription.

Doesn't account for expansion. If your customers usually upgrade plans over time, this has a big impact on LTV.

Produces an over-optimistic estimate of LTV. Aspects like future risk, etc. are not accounted for.

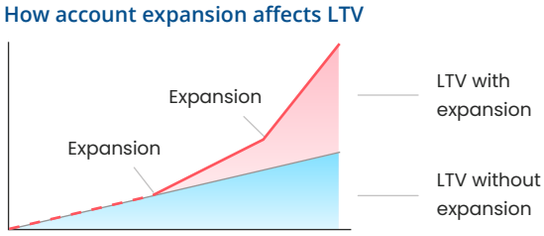
How Churn affects LTV

The simple LTV formula assumes that churn happens linearly over the lifetime of a cohort. This is never really the case in most real-world scenarios. Most businesses see cohorts with churn at its highest in the first three months, before tapering off in later months:



In the example above, the blue "realistic" churn would lead to a far lower LTV than that of the linear model.

How account expansion affects LTV



Customer X is on a $100 monthly plan. We expect them to churn after 1 year. LTV = $1200

Customer Y is also on $100 monthly plan, also expected to churn after 1 year. But Customer Y upgrades plans to a $150 monthly plan in month 4, and then again to a $180 plan in month 8. LTV = $1800 (Pretty significant difference!)

David Skok, Matrix Partners

"We are using a formula to predict the future, and the future, by it's very definition is not predictable."

"...The value in this analysis is to get enough accuracy to make useful business decisions, such as what factors to look at to improve profitability..."

Towards a more "advanced" LTV estimate

SaaS Metrics expert David Skok (@BostonVC) proposes a new formula for predicting LTV, which takes into account several factors ignored by the simple formula:

Reduced value of money over time
The accepted way of modelling the reduction in value of money when viewed as a future resource, i.e. a dollar today is valued higher than a dollar in the future.

Risk
Particularly in the startup space, there is virtually unlimited risk in the form of changes to the global market, technology becoming obsolete and aggressive competition.

Customer growth
Many mature SaaS businesses exhibit strong MRR growth over the customer lifetime, in some cases resulting in negative churn.

Accounting for these in the LTV formula results in a more pessimistic, yet realistic projection of value.

What costs should I include in Gross Margin?

Hosting fees, other 3rd party web fees Support costs
Onboarding costs
Account management costs

Credit card fees
Software development costs

The "David Skok" formula

In its full form:

$$LTV = ARPA \times Gross\ Margin \times \left(\frac{1}{(1-K)} + \frac{G \times K}{(1-K)^2} \right)$$

New concepts in this formula:
G is an annual growth rate for customers who haven't churned.

K applies a value reduction, and is calculated as:

$$K = (1 - Customer\ Churn\ Rate) \times (1 - Discount\ Rate)$$

Discount Rate is a pre-defined annual rate of your choosing, accommodating risk and reduced value of money over time (see opposite). David suggests a Discount Rate of 20-25% for pre-scale businesses.

Note: The above formula is calculated using yearly values for all metrics. It's also possible to translate these to monthly values if this better fits your business -- see the post at forentrepreneurs.com/ltv for details on how to calculate this.

Example

My fictional SaaS business has 1000 customers, with a total MRR of $300,000. That's an ARPA of $300. Gross margin is 85% and my customer churn rate is 10% monthly.

I'll apply a discount rate of 20%, because we're pre-scale. The monthly growth rate of non-churned customers is 25%.

The simple LTV formula gives me $2,550.
Using the David Skok formula, my LTV is $1,496.17

Clearly, Skok's formula results in a much more pessimistic projection of LTV, based on its discounting of value.

All credit goes to David Skok for his inspiring research and LTV formula. You can find detailed explanation at: www.forentrepreneurs.com/ltv.

Get more SaaS metrics resources and insights at blog.chartmogul.com