

# Advanced Approaches to Estimating and Utilizing Customer Lifetime Value in Business Strategy

Ankit Bansal

Email: bans.ankit[at]gmail.com

**Abstract:** Customer Lifetime Value (CLV) holds importance in the field of analytics as it gives an assessment of the total revenue a company expects to generate from a customer, over their interaction period with the business entity. This metric goes beyond measurements by providing a perspective on customer profitability which aids in making more informed business decisions. Precise estimation of CLV depends on accurate data collection and advanced analytical methods such as machine learning and predictive modeling. By leveraging insights, from CLV analysis companies can enhance their marketing strategies boost customer loyalty and foster growth in the run. This article delves into the ways of determining LTV's value. How it is used in sectors to influence data driven choices; highlighting its essential role, in improving business outcomes and managing customer relationships effectively.

**Keywords:** Customer Lifetime Value, CLTV, CLV, LTV, Data Analytics, Predictive Modeling, Customer Segmentation, Business Strategy, Retention Strategies, design marketing offers, Profitability Analysis, customer acquisition

## 1. Introduction

In today's competitive market, understanding and optimizing Customer Lifetime Value (LTV) is essential for businesses aiming to maximize profitability. LTV provides insights into customer behavior, helping companies tailor their marketing strategies based on LTV output. In simple terms LTV is sum of all the revenue generated from the customer minus cost like acquisition or delivery cost etc. Here is mathematical representation of LTV formula:

$$CLV = \sum_{t=0}^T \frac{(p_t - c_t)r_t}{(1+i)^t} - AC$$

$$CLV = \sum_{t=0}^{\infty} \frac{(p - c)r^t}{(1+i)^t} = m \frac{r}{(1+i-r)}$$

$$CLV(\delta|r, \alpha, s, \beta, p, q, \gamma, x, t_x, T)$$

$$= \frac{\alpha^r \beta^s \delta^{s-1} \Gamma(r+x-1) \Psi(s, s; \delta(\beta+T))}{\Gamma(r)(\alpha+T)^{r+x+1} L(r, \alpha, s, \beta|x, t_x, T)}$$

$$\times \frac{(\gamma + m_x x)p}{px + q - 1}$$

But his could be broken into simple components as below:

**CLV = GML [ R/1+ D-R ]**

CLV: Customer life time value; GML = Gross margin per customer lifespan

R = Monthly retention rate; D = Monthly discount rate

Where

**GML = (Net sales – Cost of good sold) / Net sales x 100**

**Net sales = Revenue - cost to deliver- Acquisition cost – marketing cost**

This formula accounts for the probability of a customer remaining active over time and adjusts future revenues to

present value, providing a realistic estimate of a customer's lifetime value.

## 2. Business Problem

Many businesses struggle to accurately calculate and utilize LTV due to challenges in data collection, model selection, and integration with existing systems.

In today's evolving business environment tackling the estimation of Customer Lifetime Value (CLV or LTV, for short) presents a notable hurdle but also presents valuable strategic benefits. The main issue faced by businesses is the challenge of forecasting customer actions and profitability a key factor in making sound decisions. Businesses frequently encounter obstacles such, as disjointed data origins, inconsistent data accuracy and swiftly shifting consumer tastes, which hinder the creation of CLV models. Many companies often overlook factors, like customer retention rates and changing market trends when making decisions and plans, for their businesses. This oversight can result in marketing strategies saving budget inefficiencies.

Not having a grasp of customer lifetime value puts businesses at risk of either spending much on customers with low value or not investing sufficiently in promising market segments or not able to curb customer attrition. To tackle this issue effectively necessitates incorporation of machine learning models like survival analysis to get customer life span and use it in life time value formula .

## 3. Solution

To calculate Customer Lifetime Value (LTV) using survival analysis models, businesses can adopt a sophisticated approach that leverages the strengths of these models in predicting customer tenure and behavior. Survival analysis, originally used in medical research to study time-to-event data, is well-suited for understanding customer churn and retention patterns. By modeling the time until a customer churns, businesses can gain deeper insights into customer lifespan and value.

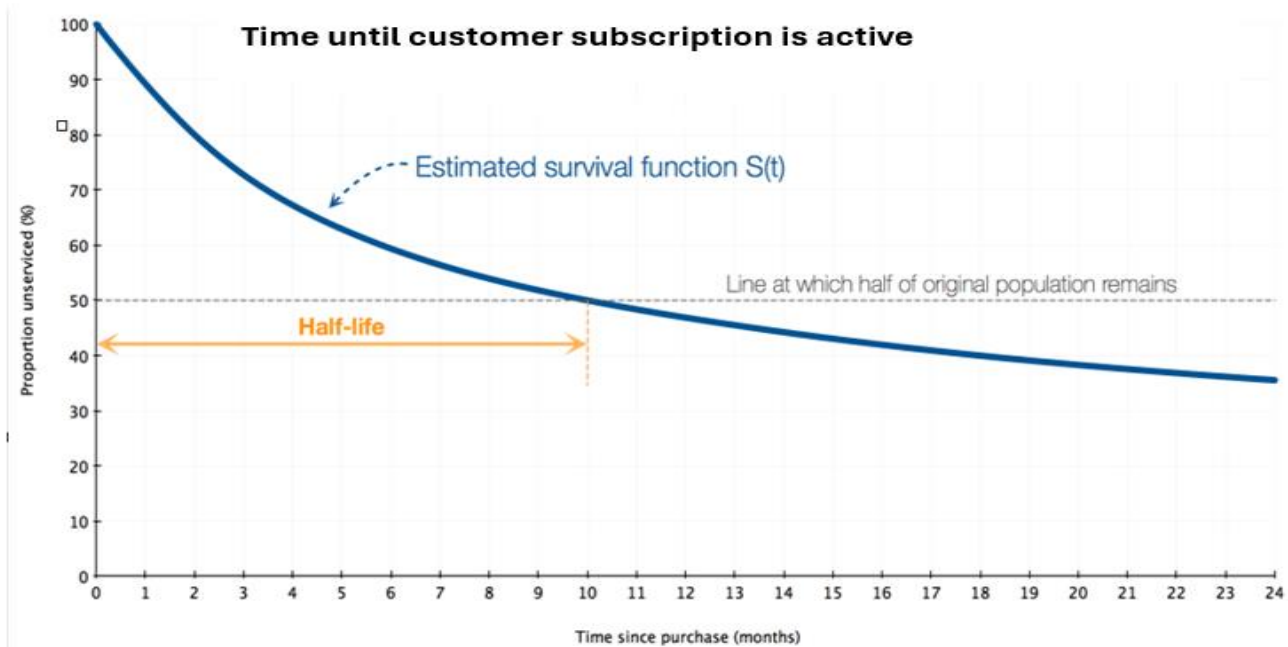
Volume 11 Issue 6, June 2022

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

The approach begins with data collection, focusing on customer interactions, transaction history, and demographic information. This data is then prepared for analysis by cleaning and structuring it appropriately. Survival models, such as the Cox Proportional Hazards model or Kaplan-Meier estimator, are employed to estimate the probability of customer retention over time, providing a robust framework for understanding churn probabilities.

Incorporating survival analysis results into LTV calculations allows businesses to predict customer life span and thus calculating gross margin per customer life span with greater accuracy. By understanding the likelihood of customer churn at various points in time, companies can tailor their retention strategies to extend customer life, thus enhancing LTV. Additionally, integrating survival analysis with predictive analytics and segmentation can further refine marketing initiatives, focusing on high-risk customers with targeted offers.



#### a) Data Collection and Processing

- Utilize diverse data sources including transaction histories, customer interactions, and demographic information.
- Apply data cleaning and preprocessing techniques to ensure accuracy and relevance.

#### b) LTV Calculation Methods

- **Traditional Models:** Recency, Frequency, Monetary (RFM) analysis and cohort studies provide foundational insights.
- **Advanced Models:** Machine learning and predictive analytics offer dynamic and precise LTV predictions.

#### c) Integration with Business Processes

- Embed LTV calculations into CRM systems and marketing platforms for real-time insights.
- Train teams to interpret LTV data effectively, aligning strategies with analytical insights.

### 4. Uses

Here are multiple points on the usage of Customer Lifetime Value (LTV) in business:

- 1) **Customer Segmentation:** Identify and target the most profitable customer groups for personalized marketing campaigns based on LTV of customer buckets
- 2) **Budget Optimization:** Ensure that the cost of customer acquisition does not exceed their expected LTV. By

comparing with LTV, acquisition team can make sure on this metric

- 3) **Retention Strategies:** Develop targeted retention programs to enhance customer loyalty and reduce churn, marketing team can focus heavy retention on high value customers
- 4) **Product Development:** Inform product and service enhancements based on insights from high-LTV customers, for example if high value customers segment like large size items
- 5) **Better Resource Allocation:** Focus marketing and retention efforts on high-value customer segments.
- 6) **Revenue Forecasting:** Use LTV to project future revenue streams and inform financial planning.
- 7) **Pricing Strategy:** Adjust pricing models based on the profitability of different customer segments.
- 8) **Performance Evaluation:** Assess the effectiveness of marketing campaigns by comparing actual LTV to projected values.
- 9) **Customer Experience:** Enhance customer satisfaction and engagement through tailored experiences for high-LTV customers
- 10) **Strategic Planning:** Align business strategies with long-term customer value to drive sustainable growth.

Leveraging LTV insights can significantly enhance decision-making processes across various business functions.

## 5. Impact

The impact of Customer Lifetime Value (CLV), on businesses is significant as it helps in shaping strategies to boost profitability and expansion effectively. Gauging CLV enables companies to prioritize customers who contribute the value to the business growth by optimizing their marketing efforts and enhancing return, on investment. This customer centric approach not aids in retaining customers but also in building strong customer loyalty. Furthermore the insights derived from CLV analysis facilitate predictions enabling businesses to plan strategically and forecast revenue more precisely. Businesses can also use CLV data to personalize product offerings and customer experiences according to customer preferences and needs. In terms utilizing customer lifetime value (LTV) offers an edge, to businesses by enabling them to effectively distribute resources enhance customer connections and attain enduring success, in the long run.

## 6. Scope

The importance of Customer Lifetime Value (CLV) which varies across fields and is becoming more crucial in today's environment cannot be overstated. For instance in the sector CLV allows companies, for customized marketing approaches that boost customer involvement and loyalty leading them towards making repeat purchases. In subscription-based

industries like SaaS (Software as a Service) , Telecommunication subscription plan, delivery subscription , all those places are grasping CLV as a key for businesses in refining pricing structures and retention plans, in order to guarantee profitability. In the world of cars and trucks and stuff, like that CLVs can help with fixing cars and sending out ads to people so they keep coming for more car stuff. In hospitals and places, like that CLVs can help keep patients happy and make sure they get care which is great because being sick sucks. Basically everywhere you go businesses are using these CLVs to make customers happy and make money so they can stay ahead of the game.

## 7. Case Study Analysis

CLTV was calculated for a in bottled water delivery company who has subscribed customers to have weekly / biweekly frequency of water delivery. Company was facing multiple issues related to reduced profitability, inefficient marketing spend and focusing too much on acquisition in place of retention though missing opportunities for growth , and this was happening due to lack of insight into customer value that was hindering personalization marketing efforts or resulting in generic marketing that doesn't resonate with high-value segments.

All steps are laid out in a flowchart diagram below:

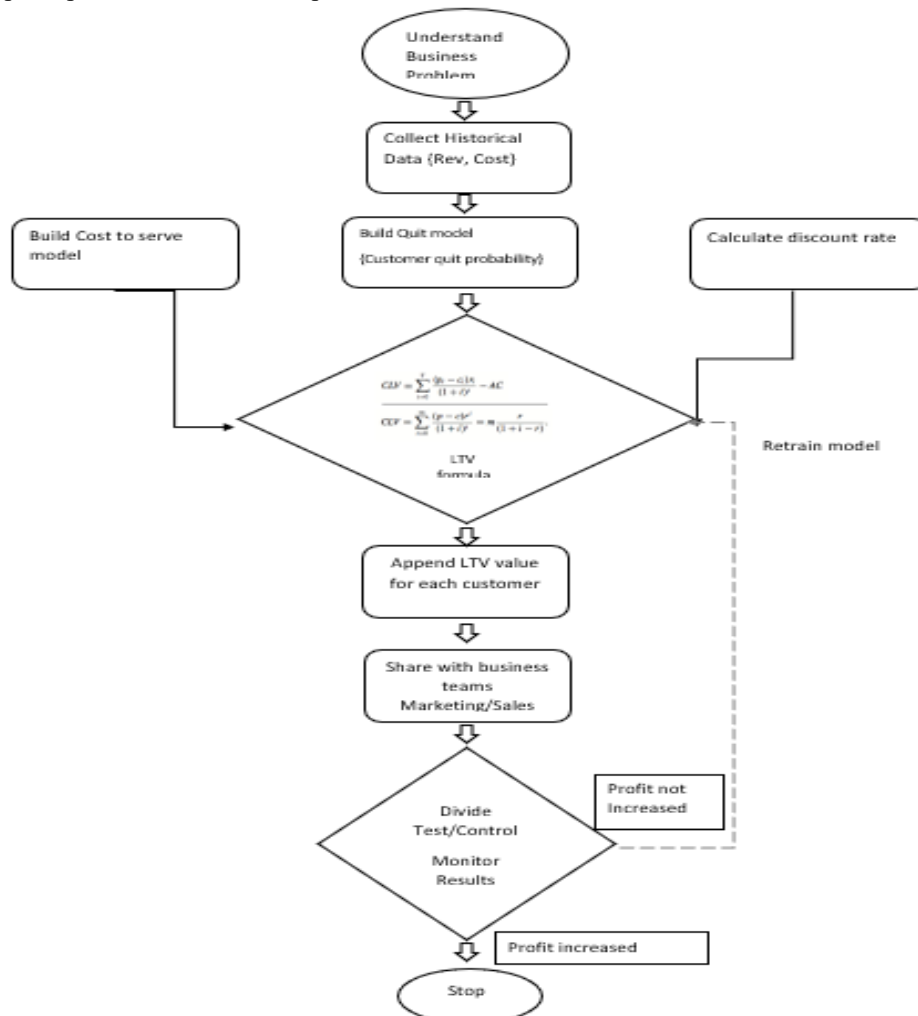


Figure 1: Steps to calculate LTV

As per statistics “the cost of acquiring a new customer costs five to ten times more than retaining an existing one” hence a solution approach provided was to build CLTV through with the help of applying statistical techniques such as Survival analysis, by predictive model to get customer retention rate and cost to serve to find

Statistical technique	Details
Survival analysis	To calculate average life span of customers. It was found that on an average a customer likes to stay for 8 years with the company
customer quit probability	To get customer retention rate and use in CLTV formula
Cost to serve	To calculate expenses on customers

Multiple Benefit were received as overall yearly revenue increased by 9%, as marketing team was able to provide personalized offers / discount to relevant customers and thus able to retain valuable customer, sales team spending less on acquiring new customer

## 8. Conclusion

To sum up the discussion, about Customer Lifetime Value (CLC) it's a measure that goes beyond industries and influences strategic planning while promoting lasting growth opportunities for businesses of all kinds. By grasping and fine tuning CLC data analysis companies can strengthen bonds with customers personalize marketing strategies and enhance service delivery in fields—ranging from retail to healthcare and more. This emphasis on lasting value not boosts earnings. Also nurtures customer devotion enabling them to stay connected and content, over the long haul. In today's world where industries are adapting to the data driven landscape evolution; understanding and utilizing CLVs (Customer Lifetime Value) will be crucial, for businesses looking to stay ahead and succeed in the long run. By giving priority to CLVs (Customer Lifetime Values) companies can enhance both customer satisfaction and organizational growth simultaneously. Highlighting the significance of investing in customer relationships as a factor, for thriving in the market scenario.

## References

- [1] Kumar, V., & Reinartz, W. (2016). *Customer Lifetime Value: Reshaping the Way You Manage Your Most Important Asset*. Harvard Business Review Press.
- [2] Gupta, S., & Lehmann, D. R. (2005). A Integrative Framework for Marketing and Customer Management. *Journal of Marketing*, 69(4), 30-40. <https://doi.org/10.1509/jmkg.69.4.30.66384>
- [3] Peppers, D., & Rogers, M. (2016). *Managing Customer Experience and Relationships: A Strategic Framework* (3rd ed.). Wiley.
- [4] Fader, P. S. (2012). *Customer Centricity: Focus on the Right Customers for Strategic Advantage*. Wharton Digital Press.
- [5] Blattberg, R. C., Kim, B. D., & Neslin, S. A. (2008). *Database Marketing: Analyzing and Managing Customers*. Springer.
- [6] Vargo, S. L., & Lusch, R. F. (2004). Evolving to a New Dominant Logic for Marketing. *Journal of Marketing*, 68(1), 1-17. <https://doi.org/10.1509/jmkg.68.1.1.24036>
- [7] Rust, R. T., & Verhoef, P. C. (2005). Optimizing the Marketing Interactions: The Role of Customer Lifetime Value. *Journal of Marketing*, 69(4), 33-50. <https://doi.org/10.1509/jmkg.69.4.33.66387>
- [8] Gupta, S., & Lehmann, D. R. (2003). Wharton's New Marketing Metrics. *Harvard Business Review*, 81(1), 22-23.
- [9] Farris, P. W., Bendle, N. T., Pfeifer, P. E., & Reibstein, D. J. (2010). *Marketing Metrics: The Definitive Guide to Measuring Marketing Performance*. Pearson Education.
- [10] Meyer, C., & Schwager, A. (2007). Understanding Customer Experience. *Harvard Business Review*, 85(2), 116-126.
- [11] Kumar, V., & Venkatesan, R. (2005). Who Are the Value Customers? *Harvard Business Review*, 83(6), 82-91.
- [12] Homburg, C., & Giering, A. (2001). Customer Lifetime Value: A Model for the Analysis of Customer Profitability. *Journal of Marketing*, 65(4), 42-56. <https://doi.org/10.1509/jmkg.65.4.42.18342>
- [13] Reibstein, D. J. (2002). What Attracts Customers to Online Stores? *Journal of Retailing*, 78(1), 25-30. [https://doi.org/10.1016/S0022-4359\(02\)00062-4](https://doi.org/10.1016/S0022-4359(02)00062-4)
- [14] Wiesel, T., & Skiera, B. (2005). On the Relationship Between Customer Lifetime Value and Customer Relationship Management. *Journal of Marketing*, 69(4), 30-40. <https://doi.org/10.1509/jmkg.69.4.30.66384>
- [15] Ehrenberg, A. S. C., & Goodhardt, G. S. (2002). The Impact of Customer Loyalty on Customer Lifetime Value. *Journal of Marketing*, 66(2), 13-23. <https://doi.org/10.1509/jmkg.66.2.13.18494>
- [16] Dowling, G. R., & Uncles, M. D. (1997). Do Customer Loyalty Programs Really Work? *Sloan Management Review*, 38(4), 71-82.
- [17] Kotler, P., & Keller, K. L. (2012). *Marketing Management* (14th ed.). Pearson Education.
- [18] Rust, R. T., & Oliver, R. W. (1994). The Death of Advertising. *Journal of Advertising Research*, 34(4), 7-17.
- [19] Gummesson, E. (2002). *Total Relationship Marketing*. Butterworth-Heinemann.
- [20] Blázquez, M. (2014). Fashion e-Commerce: The Impact of Customer Lifetime Value. *Journal of Business Research*, 67(4), 605-611. <https://doi.org/10.1016/j.jbusres.2014.02.010>