Predictive Analytics and Customer Lifetime Value: An Inside Perspective
Enterprise Drives Customer Value to the Next Level

Insights from a webinar in the Applying Business Analytics Webinar Series

Featuring:
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Introduction

Who are your best customers? How can you make good customers better? Who should you try to lure away from the competition? Once you win them over, how can you secure their loyalty? Which customers are likely to defect, and how can you prevent that?

Those are perennial questions for most any organization. The answers can be elusive if your customer base includes millions of individual and business accounts, more than a million transactions a week, and the largest fleet of passenger vehicles in the world.

That’s the scenario for Enterprise Holdings, owner of the Enterprise Rent-A-Car, Alamo Rent A Car and National Car Rental brands. The world’s largest rental car company, Enterprise is the 16th-largest privately held company in America. With $14 billion in revenue for 2010, Enterprise is a clear success story, but the company is continually seeking to improve its value to customers and in turn, customers’ value to the company.

So who are those best customers? In trying to identify them, it would be tempting to look at your big spenders, but that focus can lead you down the wrong path, said Brian Curtin, Vice President of Marketing Services with Enterprise Holdings. “Too often, when people talk about customer lifetime value, they’re talking in terms of revenue. We would all like to think revenues automatically equate to profits, but that’s not always the case. Customers with the same revenue can have very different profitability. If you want to get this right, you have to focus on that profitability.”

Some of those big spenders might be quite costly to serve. They might be the ones who forego the onboard GPS option but expect your customer service agents to give them detailed directions. They might be the ones whose rental vehicles come back in need of more TLC from the service team. They might be the ones who hold up the check-in lines while they mull over contract options or grouse about the color choices.

So, once you account for cost to serve, is profitability inherently a good indicator of customer value? Yes and no, said Curtin. There can be risks to making decisions based solely on a customer’s current profitability. Major market events such as an economic downturn or a rise in fuel prices will change the picture. Life events such as marriage or a new job will materially affect a customer’s product needs, behaviors and profitability. Acting on a present-day view of profitability, a marketer could misread customers and provide the wrong kind of treatment.

Profitability does not stand still. A retrospective view will tell you which customers have been economically valuable over a given period. But it doesn’t account for likely future changes in customer behavior, market conditions and product life cycle.

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Considering Customer Lifetime Value

To consider the real profit potential of customers, marketing and sales functions have begun exploring an equation called customer lifetime value (CLV) that treats each customer (or segment) as an investment instrument similar to an individual stock in a portfolio.

Customer lifetime value can be defined as the net present value of cash flows (past and future) attributed to a customer, household or segment for a designated time period. CLV shows you which customers will offer the highest value in the future, which in turn identifies the core attributes you should look for in current customers and prospects.

Where it has been used, customer lifetime value has generally been calculated at an aggregate level. Forward-thinking organizations such as Enterprise are working to bring the focus to the individual level, the household level or the account level. Moving the calculation out of that aggregate world changes the dynamic relatively quickly.

“There is no one, single way to approach the process of calculating customer lifetime value,” said David Ogden, a Principal Analytics Consultant at SAS. “There are a variety of approaches – some of which are so simple as to be inaccurate, some so complicated as to be difficult to implement, and then there’s a sweet spot in the middle, which is where Enterprise has focused.”

Figure 1. Customer lifetime value is the net present value of cash flows (past and future) attributed to a customer.
Four Steps to Better Customer Value by the Numbers

Assemble the necessary historical data in analysis-ready format.

“When we started on this path of customer lifetime value, the first step was to create the data environment,” said Curtin. “We knew we had a tremendous amount of data – we’re fortunate to have a lot of customer and transactional data within our Teradata warehouse – but the form it was in at that time was not on an apples-to-apples basis and did not allow us to do the work necessary.

“In addition to the data that we had within our warehouse, we looked around and saw that we had a lot of vital information, both within our own environment and also at our partners, that was not making it into Teradata. Some of it was campaign information, demographics, website visits, customer relationship management information and so on. We brought this data into the Teradata warehouse as well, so when we had a view of individuals or accounts, it would truly be a complete view and allow us to do our best lifetime value calculations.”

“The data used in models and calculations for customer lifetime value will be a little different for every industry,” said Ogden. “But at a high level, you’re typically going to be collecting data around customer demographics, measurements of the customer experience, past customer behavior, customer loyalty/tenure, revenue, account adjustments, bad debt, cost to acquire and cost to maintain or serve.” Once the data sources are located and brought into the data warehouse, the data is prepped for analysis. “We push all this information through SAS data quality tools for integration and enrichment, and put it in two receptacles,” said Curtin. “One gives us a view on the individual basis, so we can see exactly what an individual has done with us across our brands and what they mean to us. We can also look at everything on an account basis across our brands. Layering the SAS Analytics tools on top of that gives us the platform necessary to do things such as calculate customer lifetime value or build predictive models.”

Understand costs at a customer level.

“There are definitely some challenges when you think about calculating customer profitability, one of which is the need to understand costs at the customer level,” said Ogden. “Some costs in the business may be easier than others to associate with a specific customer.”

That is where methodologies such as activity-based costing come into play. An activity-based cost system mirrors the day-to-day activities of people and systems. It takes data from the accounting system and other transactional/operational systems to accurately measure the costs of activities, processes, products, services, customers and departments.
Activity-based costing evaluates how resources are consumed to perform an activity, and then how activities are performed to support the company’s products, services, customers, channels and brands. How much does it cost to book a reservation? Check in a rental customer? Prep the vehicle? How many of these activities did the transaction require? This two-stage costing process yields a much more meaningful picture of the true economics of the business, compared to traditional accounting methods that focus on direct labor and direct costs within a single accounting period – and broad-brush allocations of indirect costs.

The resulting cost allocation figure might not be precise, but it is accurate enough in that it enables meaningful comparisons among customers. For example, it is not all that useful to know that Customer A consumed exactly $12.42 of contact center time to conduct this month’s transactions. But it is useful to know that Customer A fits a certain pattern, so you know how to work with that customer to maximize the profitability and mutual value of the relationship.

This is a simplistic view of the methodology, of course. A rigorous activity-based costing system will include a modeling environment that accounts for weighted variables far beyond department-level costs and total transaction volume. An analysis environment helps users model, assign and drive costs from resources to activities and to supporting products, customers, services and channels. The model structure should offer basic and complex drivers to define how to flow costs, and be quickly modified as the organization changes.

**Apply predictive analytics to project future customer value.**

"Once you have integrated the necessary historical data and calculated customer profitability, your first step is to predict the future under a status quo scenario," said Ogden. “Here is where you would ask, ‘What is the future value of our existing base of customers, if we hold the course and don’t make any different decisions?’ Ultimately, you’ll be leading toward a projection of the future, which will lead you to predictive analytics.”

**Predictive analytics** can reveal why something occurred in the past, to predict future probabilities in holistic context, not just “if they did this in the past, then they’ll surely do this in the future.” Predictive modeling has been widely embraced across industries to segment customers, gauge retention propensity, predict and mitigate fraud and risk, identify optimal allocations of resources and more. Predictive analytics gives Enterprise Holdings critical insight to guide marketing activities:

- Identify the historical factors that maximized return on customer engagements in the past.
- Use that knowledge to understand why customers responded to certain messages and promotions.
- Know which customers should be the focus of new customer engagement efforts.
Use what you know about customer lifetime value to make better decisions.

“Once you have implemented this information environment, the endgame isn’t about calculating customer lifetime value and future cash flow,” said Ogden. “It is about using CLV as intelligence to optimize future value – to use it to make different decisions, to start rethinking your strategies and focusing your investments in a way that will increase that lifetime value.”

It’s Not About Star Treatment Versus Neglect

It would be a mistake to use customer lifetime value as a way to identify prime customers for pampered treatment and low-value customers for austere treatment, said Ogden.

“One client I worked with used the customer lifetime value calculation to assign broad categories of value, such as one-star to four-star customers. They sent that information into their call centers with the idea that four-star customers would get priority treatment, and the one-stars would get non-priority treatment, perhaps wait longer on hold or get less help solving a problem. There are some benefits to that approach, but one of the problems is that it becomes a self-fulfilling prophecy. The low-value customers just become lower-value.”

A better approach is to think not exclusively about which customers to focus on for their high value, but on improving the value of all customers, wherever they are on the continuum.

Curtin described a simple way of conceptualizing that mindset, starting with grouping customers into quadrants by their profitability and retention propensity. On the x axis is profit margin from low to high; on the y axis, the retention likelihood.

“In the upper right quadrant of this graph are high-margin, loyal customers – those with the highest customer lifetime value. Now that we know who they are, we want to identify what makes them high-value. What can we learn from them so we can go out and acquire (or develop) more of those people?”

The first place to look for more potential high-CLV people is among those who are currently medium value: customers who might be high-margin but flight risks, or loyal customers with mediocre margins. Based on what you learn about the highest-value customers, you can take action to drive behavior that improves either the margins or the retention.

In the lower left quadrant are the low CLV people, those who represent low margins and low retention. “We’re going to see what levers that we can pull to move those people up,” said Curtin. “We might not be able to turn them into high-CLV people, but maybe we can turn them into medium-CLV people.”
What levers do you pull? It depends. The CLV calculation and predictive models enable you to decompose the drivers of value, so you know what actions will improve that value. Maybe it means rethinking your customer segmentation, cross-sell/up-sell and retention activities. If you have done a good job quantifying measurements of the customer experience, you might see opportunities for process improvements. You might refocus your channel strategy or implement new cost controls.

"With a customer lifetime value methodology in place, you know in advance which levers are important, and of those, where you can focus to get the biggest bang for the buck if you improve it," said Ogden.

Granted, a good number of people in that low-CLV group are what they are, and that's all they are likely to be to the company. "The answer is not to ignore them, but to invest strategically," said Curtin. For instance, if these people are cost-conscious, sporadic travelers, perhaps they would be game for discounts on rentals during times when supply exceeds demand, such as after the summer peak vacation period or immediately after holidays.

"This quadrant perspective may seem simplified, but it's actually pretty profound," said Ogden. "It is surprising how it is often not intuitively clear to organizations. It is tempting to think that once you've calculated CLV and identified your highest-value customers, you then just focus on keeping them happy. The key is to learn from them so you can improve the value of all customers."

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CLV Isn’t Everything

“I like the quote from Warren Buffet, “Beware of geeks bearing formulas,”’ said Curtin. “The formulas can be very helpful. They can help you make the right decisions to drive your business, but if you fall into the trap of believing that the formulas are the be-all and end-all to your business, that’s when it’s not going to work out so well.”

For one, CLV can be an imperfect metric. It might not account for important connections, Curtin noted. “Consider a hypothetical customer, Mr. Titles. He rents from us one time a year. He gets a low rate, and he requires that we deliver the vehicle to him and pick it up from him, which is a service that we offer. From a CLV formula perspective, Mr. Titles represents pretty low lifetime value. The reality of the situation is vastly different. The reality is that Mr. Titles is worth a tremendous amount of value to us, because he is the CEO of a company that spends more than $1 million a year with us on corporate rentals, and on top of that, the $1 million-a-year contract is up for renewal in two months. If we relied strictly on a straight CLV formula, we would make a mistake as to how we handled Mr. Titles.”

Consider also that CLV might not capture the power of influence, said Ogden. “When you focus on using individual transactions to try to project the future value of customers, you might miss qualitative factors that are important value components, such as word of mouth and social connections. With the prevalence of online social networks and mobile connectivity, the idea of social influence is more important than in the past. Mr. Titles might have a brother who has thousands of friends on Facebook or a wife who is a blogger with tens of thousands of readers.”

The good news is that technologies are available to identify those connections and understand those spheres of influence, quantify them and use that data in your CLV calculations.

Closing Thoughts

“It can seem overwhelming when you see the formulas and the details,” Ogden said. “You can set your sights on best-in-class CLV methodology, predictions and calculations, but you can also tackle this in bite-sized pieces, in a phased approach, and make it manageable. Start small, but start somewhere.”

Enterprise adopted a three-phase approach:

- **Phase One**: Develop retention propensity and margin analysis for customers, based on some uniform cost assumptions.
- **Phase Two**: Go beyond uniform cost assumptions and get more specific based on the cost for different types of customers.
- **Phase Three**: Take the calculations and create different scenarios to see what delivers the best long-term business results, and use that to identify where to invest time and effort for maximum gain.

“This isn’t just a matter of identifying the customers who are valued; this is a matter of figuring out how to structure your business so that you are creating valuable customers.”

David Ogden  
Principal Analytics Consultant  
SAS

“You definitely want to take advantage of what customer lifetime value brings you. You have to integrate this into how you do business. How you speak to customers on the marketing side, how you deal with them when they come to your website, by whatever touch points you have with your customers ... you should be using the CLV calculations to influence and get the maximum value from the interaction.”

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About the Presenters

Brian J. Curtin
Vice President, Marketing Services, Enterprise Holdings

Brian Curtin leads marketing services initiatives for Alamo Rent A Car, Enterprise Rent-A-Car and National Car Rental. His team’s responsibilities include analytics and reporting, database applications, performance media, brand identity, marketing procurement and business administration for the three brands. Curtin began his car rental career in 1990 as a management trainee with Enterprise Rent-A-Car in Boston. He relocated to St. Louis in 1999 to take a marketing analyst position at Enterprise corporate headquarters and subsequently held a variety of roles in the marketing and communications areas.

Curtin grew up in Cambridge, MA, and received a bachelor’s degree in anthropology from Harvard University in 1989.

David C. Ogden
Principal Analytics Consultant, SAS

David Ogden has more than 20 years of experience in statistical analysis and predictive modeling. Ogden’s business experience has spanned operations and financial analysis, database marketing, acquisition and retention strategy, with a specialization in customer lifetime value methodology.

Ogden has designed solutions in a diverse range of industries, assisting customers with business challenges that require a variety of predictive modeling applications, including early-warning systems, strategic cost and revenue management, long-range economic modeling, process improvements, marketing optimization, scenario analysis and forecasting.

Prior to his consulting and corporate experience, Ogden taught college mathematics and statistics at Wichita State University.
About SAS

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