THE MEASUREMENT OF CUSTOMER LIFETIME VALUE AND CUSTOMER EQUITY

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Customer-centric strategies are the trend in today’s highly competitive market landscape. The focus on customers, on their needs, wants and expectations is the common characteristic of the organizations that achieve customer portfolio, the current and potential customers.

The paper focuses on the measurement of lifetime value (LTV) and customer equity (CE). It aims to present several ways to quantify LTV and CE. The paper underlines the main steps and variables that must be considered by marketing managers in order to assess the LTV and CE.

The declarations made by organizations about the importance of satisfying the needs and expectations of customers are no longer the exception in the market, they are the common denominator of the marketing policy of most organizations. However, a question still remains relative to the share of the organizations that achieve a thorough analysis of the customer LTV and CE, in order to devise the most effective and efficient strategies. The present paper makes a stride further by providing a set of methods that bring light and quantification in an area where qualitative approaches and bird’s eye view are customary.

Key words: analytical CRM, customer lifetime value, customer equity, measurement

Customer-centric strategies are the trend in today’s highly competitive market landscape. The focus on customers, on their needs, wants and expectations is the common characteristic of the organizations that achieve a sustainable positive performance and maintain their leading positions in the market. The concepts of customer lifetime value and customer equity became the stepping stone of marketing policies able to generate value for customers, companies and their shareholders.

1. A conceptual approach of customer lifetime value and customer equity

The essence of marketing management consists in the design of strategies that will build profitable relationships with target customers. [1] Marketing management is concentrated on the development of long-term relationships with customers and to a less extent on the achievement of a high level of profitability of each transaction.

The core of the marketing philosophy is the creation of customer loyalty and retention. Customer relationship management promotes the idea that totally satisfied and delighted customers remain loyal to the brand and the company, spread favorable words among the potential customers and ensure a sustainable positive evolution of the company through their continuous stream of purchases during the relationship with the organization and its brands.

Losing a customer means much more than losing the net profit of one transaction. In fact, losing a customer is equivalent to losing the profits generated by all the purchases that specific customer would have made from the company during the entire relationship with the organization. Consequently, high performance marketing managers focus on customer lifetime value and on customer equity.

The customer lifetime value is defined in various ways. Essentially, it is the value of the entire stream of purchases that the customer would make over a lifetime of patronage. From a supplier standpoint, a customer’s lifetime value can be defined as the present-day value of all net margins earned in a relationship with a customer [2]. The LTV is a multi-period assessment of the customer value to the firm.

While the interest in LTV increases, there are also some pessimistic opinions. Sometimes, LTV is considered “an elaborate fiction of presumed precision”. [3]

In customer relationship management, the generation of customer equity is the foremost goal of the company. Customer equity is the sum of the discounted customer lifetime values of all the company’s customers. This concept refers to both the current and the future customers. The viability of the company and its future performance depend directly on customer equity.

The simplest example that reveals the concept of customer lifetime value and customer equity refers to a convenience store that serves a small community of 700 households. The average value of the purchases made weekly by a household of that neighborhood is 60 Euros. An assumption could be that on the average, during a year, a household buys products with a value of at least 3,000 Euros (60 Euros per week multiplied by 50 weeks annually). Losing one of the households as a customer will stop a revenue stream of 3,000 Euros annually multiplied by an average of 4 years during which the household members will very likely live in the neighborhood. More precisely, the convenience store will lose the total undiscounted revenue of 12,000 Euros, respectively a 9,000 Euros discounted value generated by that household. At the same time, the store management should design and implement strategies able to satisfy and delight the members of the 700 households, in order to achieve a sustainable level of financial performance. Consequently, the customer equity
will be the center of the store policy. Considering the 700 households (current and potential customers) that create the small community served by the convenience store and the discounted revenue stream of 9,000 Euros generated by one household during a four-year interval, the organization has to profitably manage a customer equity of 6.3 million Euros in the specified period.

2. The measurement of customer lifetime value

The LTV measurement is centered on the present-day value of all net margins earned in the relationship with the customer. Consequently, the historical net margins must be compounded up to today’s value and the future net margins must be discounted back to today’s value.

The calculation of LTV requires a precise view of the revenues and costs associated with the creation and development of the relationship with a specific customer. The major factors considered for the calculation of LTV are presented in figure 1.

![Figure 1 – Major factors considered for LTV calculation](image)

There are several ways to compute LTV. Even if the concept seems to be very simple and clear-cut, there are various quantitative approaches. The main reasons of the diversity of approaches are the following:

- **types of variables considered.** A diverse array of variables may be included in the model. The inputs of the model may be defined more broadly or more narrowly. For example, recurring costs may reflect to a different extent various types of marketing and service costs.
- **relationship duration.** The duration of the relationship may also generate variations. On one side, the relationship may have a finite duration when it is based on a two-year contract (as in the case of mobile telecommunication companies) or a non-finite duration (as in the case of a hypermarket).
- **data availability at customer level.** Data availability may also be an issue. A relatively small number of companies have data at customer level, not only at the entire portfolio level. Few are able to compute the net profit corresponding to each customer. The calculation of LTV implies that all costs generated for the customer acquisition and retention, for the completion of each transaction and for relationship management are traced back to each individual or organizational customer. Such an allocation of costs provides a complete insight that is indispensable for the calculation of customer LTV.
- **statistical abilities.** The software solutions applied to the databases influence the capabilities of the marketers to compute the LTV and design appropriate one-to-one strategies.
- **time frame.** When marketers want to analyze the historical evolution of the customer lifetime value, they use data about the past behavior of the customer. The data are available in the databases of the company. However, nowadays, specialists focus more on estimating the future LTV.

The allocation of income and expenses to one customer may be accomplished according to the procedure presented in table 1.

![Table 1 – Allocation of income and expenses to a specific customer](image)

| Customer turnover |
| - Discounts granted |
| + Shipping costs passed on to customer |
| + Supplier’s credit |
In accordance with the definition, the lifetime value of an individual customer may be calculated as the sum of the discounted contribution margins generated by that customer over the analyzed period. The formula is the following:

\[
LTV_i = \sum_{t=1}^{T} CM_{it} \left( \frac{1}{1+\delta} \right)^{t} \tag{1}
\]

where: 
- \(i\) corresponds to the specific individual customer;
- \(LTV_i\) is the lifetime value (expressed in monetary units) of the customer \(i\);
- \(t\) (from 1 to \(T\)) is the time unit (month, year etc.);
- \(CM_{it}\) is the contribution margin generated by the customer \(i\) in the time unit \(t\);
- \(\delta\) is the interest rate (cost of capital that is used to calculate the net present value) corresponding to the specific time unit \(t\).

Formula (1) may be presented under the form of a detailed version by breaking down the contribution margin.

\[
LTV_i = \sum_{i=1}^{T} \left( S_i - DC_{it} - MC_{it} \right) \left( \frac{1}{1+\delta} \right)^{t} \tag{2}
\]

where:
- \(S_i\) represents the sales to the customer \(i\);
- \(DC_{it}\) is the direct cost associated with the customer \(i\);
- \(MC_{it}\) is the marketing cost associated with the customer \(i\).

3. The measurement of customer equity

Customer equity is measured as the sum of the lifetime values of all the company’s customers. This indicator reflects how much a company is worth at a specific point in time as a result of its customer management efforts. An example of formula for the measurement of customer equity is presented below:

\[
CE = \sum_{i=1}^{N} \sum_{t=1}^{T} CM_{it} \left( \frac{1}{1+\delta} \right)^{t} \tag{3}
\]

where:
- \(CE\) is customer equity;
- \(i\) (from 1 to \(N\)) corresponds to the individual customers;
- \(t\) (from 1 to \(T\)) is the time unit (month, year etc.);
- \(CM_{it}\) is the contribution margin generated by the customer \(i\) in the time unit \(t\);
- \(\delta\) is the interest rate (cost of capital that is used to calculate the net present value) corresponding to the specific time unit \(t\).

The formulae that have been presented are based on the assumption that customers remain fully active during the period under consideration. In a real business environment, this assumption is not valid. Consequently, marketers should take into account customer retention probabilities and adjust the formulae for the determination of LTV as follows:
\[ LTV_i = CM_i \times \left( \frac{R_i}{1 + \delta - R_i} \right) - AC \]  

(4)

where: \( R_i \) is the retention rate and \( AC \) is the cost of acquiring the customer \( i \).

The perspective into the future is by far more important than into the past when computing the LTV [5]. In the process of strategy design, the past does not provide marketers a relevant view of customer LTV. The main factors that generate the preference for a perspective into the future are the following: (i) revenues from customers tend to grow over time as they buy more in terms of quantity and an ever wider range of products from the company’s portfolio; (ii) costs associated with customer retention are smaller than customer acquisition costs; (iii) totally satisfied and delighted customers generate additional revenue to the supplier due to their referrals; (iv) loyal customers pay prices that are often higher than those offered to new customers (companies provide discounts to lure potential customers into buying).

An example of CE calculation is presented in table 2. The data reflect the situation of a company that acquired 2,000 new customers due to a direct mailing campaign with a response rate of 4%. The average annual sales value generated by a customer is 250 Euros and it is assumed to be constant over the lifetime of the customer. The gross margin is 30%. The retention rate increases progressively from the first to the fifth year of the customers’ lifetime. The profit per period is discounted to the present value with an annual rate of 14%.

The calculated customer equity is 68,106 Euros generated during a lifetime of five years. The CE value reflects the total net present value of the profits generated by the customers retained by the company. The improvement in the annual retention rate may have a positive effect on the customer equity value.

### Table 2 – Example of CE calculation

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales per customer (Euros)</th>
<th>Manufacturer’s gross margin (Euros)</th>
<th>Marketing and servicing costs (Euros)</th>
<th>Retention rate (%)</th>
<th>Survival rate (E%)</th>
<th>Number of active customers</th>
<th>Annual profit per customer (Euros)</th>
<th>Annual discounted profit per customer (Euros)</th>
<th>Total discounted profit per period (Euros)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>250</td>
<td>75</td>
<td>25</td>
<td>35</td>
<td>35.0</td>
<td>700</td>
<td>50</td>
<td>50</td>
<td>35,000</td>
</tr>
<tr>
<td>2</td>
<td>250</td>
<td>75</td>
<td>25</td>
<td>50</td>
<td>17.5</td>
<td>350</td>
<td>50</td>
<td>43</td>
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<tr>
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<td>25</td>
<td>64</td>
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<td>50</td>
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<td>25</td>
<td>78</td>
<td>8.7</td>
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<td>50</td>
<td>32</td>
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</tr>
<tr>
<td>5</td>
<td>250</td>
<td>75</td>
<td>25</td>
<td>86</td>
<td>7.48</td>
<td>150</td>
<td>50</td>
<td>28</td>
<td>4,200</td>
</tr>
<tr>
<td>Total CE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>68,106</td>
</tr>
</tbody>
</table>

Note:  
1. Gross margin calculated according to a 30% rate over the sales per customer.  
2. The retention rate is specific to each annual period.  
3. The annual survival rate is the share of the initial number customers that have remained loyal in the year under consideration.  
4. Estimated number calculated by multiplying the initial number of new customers (2,000 customers) by the survival rate.  
5. From the company’s perspective, the annual profit per customer is calculated by deducting the marketing and servicing costs from the manufacturer’s gross margin.  
6. Calculated on the basis of 14% discount rate.  
7. Total value obtained by multiplying the annual discounted profit per period by the number of active customers in that period.

The lifetime value and the customer equity are indispensable metrics for the effective and efficient management of the relationships with customers. They guide the strategic decisions of the company. In order to improve the LTV and CE values, companies must continuously diminish the acquisition costs, strengthen the retention rates and augment the profit earned per customer. Every improvement in the LTV and CE influences the financial results of the organization and has a significant impact on its position in the marketplace.

### BIBLIOGRAPHY
