Customer Lifetime Value and it`s determination using the SAS Enterprise Miner™ and the SAS OROS-Software™

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Business strategies

To acquire more customers

To increase customer's profitability

To retain more customers
Customer Lifecycle

- More efficient acquisition of new customers
- Better Cross-/Up-Selling
- More efficient customer retention
- Recovery of potentially valuable customer relationships
- Faster termination of potentially less valuable customer relationships
The CLV helps to answer...

- More efficient acquisition of new customers
- More efficient customer retention
- Recovery of potentially valuable customer relationships
- Faster termination of potentially less valuable customer relationships

- Do the customers have a high probability for cross-selling?
- Do the customers have a high potential?
- Do the new customers have the same target profile as the very valuable customers?
- Do the new customers have a low potential?

Profit

Loss

Acquisition  Intensification  Retention  Termination/Recovery
Definition Customer Lifetime Value

The Customer Lifetime Value is the net present value of a customer. It considers the difference between the total amount of revenues from a customer and the company's expenses for this customer during the whole duration of relationship.
Components to determine the CLV

Value of a customer

Present Value of a customer

Quantitative components
- Sales volume
- Acquisition costs
- Direct costs
- Activity-based costs

Future Value of a customer

Qualitative components
- Cross-Selling/Up-Selling Potential
- Referral Potential
- Information Potential
- Opinion leader Potential

Dynamic = Net Present Value of a customer’s relationship

CLV
Calculation of the CLV

\[ CLV^k = \sum_{t=0}^{T} \frac{E_t^k - A_t^k}{(1 + i_t)^t} = \left( E_0^k - A_0^k \right) + \frac{E_1^k - A_1^k}{(1 + i_1)^1} + \frac{E_2^k - A_2^k}{(1 + i_2)^2} + \ldots + \frac{E_T^k - A_T^k}{(1 + i_T)^T} \]

CLV\(_k\) = Customer Lifetime Value of a customer \(_k\)

\(E_t\) = revenue from a customer \(_k\)

\(A_t\) = expenses for a customer \(_k\)

\(_k\) = customer \(_k\)

\(t\) = time period \((t=0, 1, 2, \ldots)\)

\((t=0)\) = today

\(T\) = predicted duration of a customer's relationship

\(i\) = interest rate
CLV in insurance industry

- Calculating the Present Value
- Determination of the potentials concerning the following components:
  - Cross-Selling Value
  - Cancellation Value
  - Claim Value
Present Value of an insurance customer

\[ PV = \text{Premiums} - \text{costs of claim} - \text{(activity-based costs)} \]

Directly related to a customer
Activity-based costs of a customer

- Total Salaries Marketing
- Main Process „to attract new customers“
- Cost category „New customer“

Special Process Marketing
Activity-based costs of a category

### Costs for Main Processes

<table>
<thead>
<tr>
<th>Name</th>
<th>Cost</th>
<th>UnitCost</th>
<th>InputQuantity</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neukunde</td>
<td>774.473.36 €</td>
<td>1.548.95 €</td>
<td>800.00 Anzahl Neukunden</td>
<td></td>
</tr>
<tr>
<td>Neukunde Produkt entwickeln</td>
<td>4.959.28 €</td>
<td>9.92 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Werbung schalten</td>
<td>11.762.74 €</td>
<td>23.53 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde nachbearbeiten</td>
<td>365.440.14 €</td>
<td>798.38 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Anträge bearbeiten</td>
<td>83.673.18 €</td>
<td>167.76 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Schäden bearbeiten</td>
<td>261.905.12 €</td>
<td>57.11 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde RechtlicheBearbeitung</td>
<td>1.647.07 €</td>
<td>3.28 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Kapitalanlage/Finanzierung</td>
<td>3.717.51 €</td>
<td>7.42 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Verwaltung</td>
<td>5.115.09 €</td>
<td>10.26 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden erstellen</td>
<td>76.445.04 €</td>
<td>152.98 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Auskunft</td>
<td>38.807.66 €</td>
<td>78.38 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Vertragsänderung</td>
<td>24.624.75 €</td>
<td>49.24 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Beschwerde</td>
<td>43.063.18 €</td>
<td>87.74 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Beratungsleistung</td>
<td>40.381.25 €</td>
<td>81.38 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Beratungsleistung</td>
<td>39.377.64 €</td>
<td>78.12 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Beratungsleistung</td>
<td>7.423.21 €</td>
<td>14.91 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Beratungsleistung</td>
<td>30.81 €</td>
<td>0.62 €</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neukunde Neukunden durch Telefon Beratungsleistung</td>
<td>1.451.424.00 €</td>
<td>3.038 €</td>
<td>5.000.00 Anzahl Entwicklungskunden</td>
<td></td>
</tr>
</tbody>
</table>

### Main Process „New customer“
Future Value of a customer

Assumption: Predicted Time Period $T=1$ year

$$FV = \frac{R - \text{Cancel} + CS - \text{Claim} - \text{ABC}}{(1 + i)}$$

- $FV$ = Future Value
- $R$ = revenues
- Cancel = a customer’s cancellation value
- $CS$ = a customer’s Cross-Selling value
- Claim = a customer’s claim value
- $ABC$ = activity-based costs
- $i$ = interest rate
### Determination of the potentials

<table>
<thead>
<tr>
<th>Cancellation Value</th>
<th>Cross-Selling Value</th>
<th>Claim Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability of cancellation</td>
<td>Expected product revenue</td>
<td>Probability of cross-selling</td>
</tr>
<tr>
<td>Expected product revenue</td>
<td>Cross-Selling revenue</td>
<td>Probability of causing an accident</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expected claim amount</td>
</tr>
</tbody>
</table>
Future Value of a Customer in a multi-product company

Products in Possession (PiP)
- Revenues
- Prob. of cancelling * expected amount

Products not in Possession (PniP)
- Prob. of buying * expected revenue

Total expected revenues from PiP
= Revenues (R)

Total expected costs of cancellation from PiP
= Value of Cancellation (Cancel)

Total expected costs of claims for PiP
= Value of Claim PiP (Claim PiP)

Prob. of claiming * expected claim amount

Total expected revenue from PniP
= Cross-Selling-Value (CS)

Prob. of buying * expected revenue

Total expected costs of claims for PniP
= Value of Claims PniP (Claim PniP)

Prob. of claiming * expected claim amount

Prob. of claiming * expected claim amount

Prob. of claiming * expected claim amount

Prob. of claiming * expected claim amount

FV = \[ R - \text{Cancel} + \text{CS} - (\text{Claim PiP} + \text{Claim PniP}) - ABC \]

\[ \frac{1 + i}{(1 + i)} \]
### Example: Determination of a customer`s potential

<table>
<thead>
<tr>
<th>Product</th>
<th>Event Probability</th>
<th>Expected amount</th>
<th>Calculated Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues from PiP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car Insurance</td>
<td>-</td>
<td>1500</td>
<td>1500</td>
<td>R</td>
</tr>
<tr>
<td>Home Insurance</td>
<td>-</td>
<td>400</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td><strong>Cancellation (PiP)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car Insurance</td>
<td>0.3</td>
<td>- 1500</td>
<td>- 450</td>
<td>Cancel</td>
</tr>
<tr>
<td>Home Insurance</td>
<td>0.6</td>
<td>- 400</td>
<td>- 240</td>
<td></td>
</tr>
<tr>
<td><strong>Products not in Possession</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(Cross-Selling)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Insurance</td>
<td>0.5</td>
<td>1000</td>
<td>500</td>
<td>CS</td>
</tr>
<tr>
<td>Motorbike Insurance</td>
<td>0.1</td>
<td>600</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td><strong>Expected Direct Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car Insurance</td>
<td>0.6</td>
<td>- 1000</td>
<td>- 600</td>
<td>Claim (PiP)</td>
</tr>
<tr>
<td>Home Insurance</td>
<td>0.2</td>
<td>- 100</td>
<td>- 20</td>
<td></td>
</tr>
<tr>
<td>Life Insurance</td>
<td>0.01</td>
<td>- 20000</td>
<td>- 100</td>
<td>Claim (PniP)</td>
</tr>
<tr>
<td>Motorbike Insurance</td>
<td>0.3</td>
<td>- 500</td>
<td>- 15</td>
<td></td>
</tr>
<tr>
<td><strong>Activity-based costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For customer care, …</td>
<td></td>
<td></td>
<td>- 181</td>
<td>ABC</td>
</tr>
<tr>
<td><strong>Interest rate</strong></td>
<td></td>
<td></td>
<td>(1+i) = 1.08</td>
<td>i</td>
</tr>
<tr>
<td><strong>Future Value</strong></td>
<td></td>
<td></td>
<td>R – Cancel + CS – (Claim PiP + Claim PniP) - ABC = 854/1.08 = 790.74</td>
<td></td>
</tr>
</tbody>
</table>
Determine the components using the SAS Enterprise Miner™

Cancellation Value
- Probability of cancelling
- Expected amount of cancellation
  - Data Mining Model

Cross-Selling Value
- Probability of buying
- Expected Cross-Selling amount
  - Data Mining Model

Claim Value
- Probability of claiming
- Expected claim amount
  - Data Mining Model

combined

Future Value of a customer
Modelling the Probability of Cross-Selling
Modelling the expected Cross-Selling amount
Combination of all components which determine the CLV

Present Value
- low

Future Value
- high

Segmentation of Present Value versus Future Value
Characteristics of the customers with a low present value and a high future value

m40 = male people between 30 and 40 years
CLV based actions

Feedback-Loop

Profitable Customers
- High Potential
  - Keep + Enhance
  - Cross-/Up-Selling
  - Customer Retention

Unprofitable Customers
- Low Potential
  - Keep + Enhance
  - Repeat Purchase
  - Loyalty
- High Potential
  - Enhance + Keep
  - Cross-/Up-Selling
  - Customer Retention
- Low Potential
  - cancel
  - Limit Service
  - Termination of the relationship

Customer Base
- Low Potential
  - Enhance + Keep
  - Repeat Purchase
  - Loyalty
Customer Lifetime Value Management

- Identify the determinants of the CLV concerning a specific company
- Calculate the Present Value and determine the potentials by using the SAS Software
- Segmentation of the customers concerning the two dimensions: the customer`s Present Value and it`s Future Value
- Determinate the perfect marketing-, sales- and service-support for each customer according to it`s particular CLV
- Determinate the target profile of the special valuable customers and use it for the acquisition of new customers
Thank you for your attention!

contact: monika.seyerle@web.de
Good afternoon ladies and gentlemen. I hope you have had a good lunch and you are not too tiered now to follow my presentation.

As you can see from the conference programme, I`m going to be talking about the Customer Lifetime Value and it`s determination. My name is Monika Seyerle and after studying business administration at the university of Nürtingen in Germany, I`ve done my final thesis in corporation with SAS Institute Germany in Heidelberg.

Beside my theoretical studies, the aim was also to determine the CLV for specific insurance customers by using the SAS Software Enterprise Miner and the SAS OROS Software.

I`d like to start by looking at the theoretical determination of the CLV. Then I`ll move on to show how you can integrate activity-based costing in the CLV-concept. At the end I`m going to show you an example how the CLV can be determined for the customers of an insurance company using the SAS Software.

If there are any questions, I would be glad to answer them after my presentation.

1) First of all, I`d like to have a look at the Business strategies of a company. Several years ago, companies tried to acquire or to retain as many customers as possible. Nowadays they often take another point of view: not the quantity of customers is the important thing, but the quality of each customer, meaning how profitable each customer is. The strategies to acquire and to retain as many customers as possible, don`t take into consideration that the less profitable customers are likely to be retained as well.
But these less profitable customers consume the profit, which was gained by the highly profitable customers. The aim of the strategy “increasing customer`s profitability” is to acquire more valuable customers with more effort, and to retain valuable existing customers by treating them with more care and consideration. In this way, limited resources can be used especially for the acquisition and retention of highly valuable customers for a company.

But who are now these valuable customers? The CLV helps to find out whether a customer is of high or low value for a company.

2) Let’s have a look at the customer Lifecycle. You will notice that a relationship between a customer and a company can be divided into several stages like: acquisition, intensification, retention and recovery or termination.

This slide shows the Lifecycle of a typical customer. At the beginning of a relationship there are often required high acquisition costs. At this stage the costs are almost always higher than the incomes. The consequence is, that there is often a loss at the beginning of the relationship. Companies accept this loss because of the expected future purchases of a customer, which compensate the losses from the beginning. Assume, the profits of a customer will normally increase within the duration of a relationship and decrease again from a specific point of time. The duration of a Lifecycle depends on the line of business and on the different companies itselfs. If you want to improve the profitability of a customer, you will try to maximize the profits by increasing the incomes or by minimizing the costs. Let’s have a look at how you can improve the Lifecycle of a customer.
- First of all, a more efficient acquisition of new customers should be tried to realise.
- In the second stage better cross-, and up-selling activities for the right customers should be created.
- In the stage of retention, customer care activities should be intensified to extend the duration of a customer’s Lifecycle.
- In the last stage “Termination or Recovery” it is up to you/your turn to give up less valuable relationships or to recover customers with high potentials.

3) The question is: how can the CLV be integrated into the Lifecycle and in what way it is possible to generate higher profits.

- a more efficient acquisition of new customers is released by acquiring these customers, who have the same target profile as the highly valuable customers, with more effort. To know which of your customers are more valuable than others, it is important to set up a target profile. Then it is possible to acquire only these customers, who have the same or a similar profile as your existing highly valuable customers.
- To require a higher profit from your existing customers, it is necessary to offer Cross- and Up-Selling-offers to those customers, who have a high probability to do Cross- and Up-Selling in the future.
- Knowing that a specific customer has a high potential in the future, you can specifically try to retain or to recover him by increasing your customer care activities or offering him special products or offers.
- Customers with low potential in the future are to be treated with lower effort. Sometimes it is better to cancel the whole relationship, instead of wasting a lot of money for those less valuable customers.
The limited resources in a company can be used that way especially for highly valuable customers, instead of wasting them for less valuable customers.

4) Let`s have a look at the definition of the customer lifetime value:
The customer lifetime value is the net present value of a customer. It considers the difference between the total amount of revenues from a customer, and the companies` expenses for this customer during the whole duration of a relationship.
What does this mean in detail?

5) Let`s move on to the components, which determine the CLV. You have to distinguish between quantitative and qualitative factors.

- Quantitative factors can be measured directly and they concern the past, as for example the revenues and costs of each customer in the past.
The sales volume, acquisition costs, direct costs and activity-based costs can be regarded as quantitative components. These components can be used to determine the present value of a customer.
- Qualitative factors can`t be measured directly, because they concern the future.
Examples for qualitative factors are the Cross-or Up-Selling-Potential, the referral potential, the information potential or the opinion leader potential.

- The cross-Selling Potential deals with, how far a customer intense to buy new offered products from a company.
- The reference potential considers referrals of other, new customers made by a specific existing customer.
- The information potential considers the information a company gets from a specific customer, like information about defect products or things, which should be corrected. This employee proposal system helps the company to save money and to improve its processes.

- The opinion leader potential considers customers, who are able to canvass new customers.

Looking at this qualitative factors, a determination of a future value can be received for each customer.

The CLV is normally considering the revenues and expenses during the whole relationship of a customer. Instead of considering the whole relationship, with all the expected revenues and expenses, which is quite difficult to determine, a specific period of time can be set. This means that you just look at a certain period of time, like for example one or two years. Then you get a Future Value of a customer not for his whole relationship, but for a specific certain period of time, for example a future value for the following year.

The CLV can be determined by using the net present method, which will be described in the next slide, where the calculation of the CLV will be considered.

6) The CLV is composed of the present and the future value of a customer. The present value relates to the data out of the past. It can be calculated by reducing the expenses for a customer, from the revenues gained through this customer. As a result you get a present value for each customer concerning their purchases and actions in the past. The future value can be calculated by discounting the difference of future incomes and expenses to today´s moment of time.
But the determination of a customer’s future value is not as simple as perhaps expected, because you don’t know exactly what the incomes of a customer will be in the future and which costs are thereby incurred.

As I mentioned before, it is very difficult to predict future incomes and expenses for several years in advance. So it is more useful and even more exact to observe a restrained period of time like one or two years.

The following concept will consider a period of time of one year, meaning that the incomes and expenses will be predicted for the following year.

7) To illustrate how the present and the future value fit together in the CLV, let’s have a look at the following graph.

The present value considers the profitability of a customer in the past. The future value in contrast, focuses on the potential of a customer in the future. In case under consideration the future value is the potential value for each customer in the following year.

Companies confine themselves in general to examining the present value of their customers. But it is precisely the determination of their future potential, which is much more interesting for a company. By knowing the development of a customer, you can estimate if an investment in this customer will be profitable or not. A student for example, who possesses in general a low present value for a company, is likely to have a high potential in the future. Especially in bank or insurance sectors, students get offered check accounts for free with reference to their high potential in the future.

But how is it possible to determine the present and the future value of a customer?
8) To illustrate this point, let`s have a look at the insurance sector to exemplify how both of the values could be determined.

The present value for each insurance customer can be calculated out of their incomes and expenses in the past. These data are listed in a Data Warehouse, and a present value is quite easy to find.

The future value of an insurance customer could be determined by predicting a cross-selling, a cancellation- and a claim value for each customer for the following year. At the end, these three components are combined and one single future value for each customer can be determined.

There are a lot of more components which could be important for other companies and sectors, but I would just like to focus on these three.

9) Let me start by looking at the present value of an insurance customer. To calculate the present value, the costs have to be taken away from the incomes in form of premiums.

The biggest part of costs in an insurance company, are the costs for accidents respectively the costs of claims. These costs can be allocated directly to a specific customer.

Overhead costs, which are incurred by all customers, like administrative costs to run a company, can`t be allocated easily to a specific customer. But with activity based costing, which is getting more and more important for companies to save costs, it is getting possible to allocate overhead costs to a specific customer, according to the activities a customer takes up.

10) I don`t want to consider activity-based costing in detail, but I will just give you an overview how the overhead costs of a cost center can be allocated to a specific customer.
To succed this aim, it is necessary to use a software like the SAS OROS Software. Without this software it is much more complicated and by using the software you save a lot of time and money.

Let’s have a look at the SAS OROS Software. We will regard the cost center Marketing. I’ve created a model with the aim to allocate overhead costs, like the total amount of salaries, to specific customers, according to what processes or activities are necessary to care for a customer.

First of all, the total amount of salaries for the employees, working in the cost center Marketing, is allocated to certain special processes. These processes are activities in a cost center, like for example “sending out mailings” or “doing advertisement”.

These activities in a cost center can be put together in a main process like “to attract new customers”. These main processes group together several activities from different cost centers.

To simplify the concept, I have classified the customers into different groups according to the time they are already in the company: there are new customers, developing customers and existing customers.

- new customers are in the company for less than one year
- developing customers are from one to three years and existing customers for longer than three years with the company.

According to this, the costs of the main processes can be allocated to customer categories. For each customer category you will then find different costs.

A new customer is in general more expensive than a longtime existing customer.
11) In this slide you can see an example of different main processes and the costs of each main process. These costs can be allocated to a specific customer, every time a customer uses this process. For example the costs for the main process “order transaction” can be allocated to a specific customer, every time the customer takes an order.

12) The second step to determine the CLV is the future value. The potential of an insurance customer can be calculated by using the following formula. The future value is composed of risk-adjusted revenues, of additional revenues through cross-selling, and of predicted expenses in form of claim and activity-based costs.

Let’s have a detailed look at these components:

- risk-adjusted revenues are premiums, which are received through a specific insurance product reduced of the cancellation value for this product.
- Additional revenues is the additional money a company gets from a customer because of offering him additional cross-selling products.
- Predicted expenses are the predicted claim costs and the activity-based costs, which are estimated for the following year.

13) To determine the future value three components are to be considered: the value of cancellation, the claim value and the cross-selling value. These values can be predicted for the following year by multiplying the probability of an event by the expected amount of money for each product. For example: the value of cancellation of a specific product is determined through the probability that a customer will cancel this product in the following year, multiplied by the amount of money, which gets lost through this cancellation.

14) The calculation of the future value will be clarified by looking at the following example. It is assumed that a customer possesses two insurance
products, for which he has to pay different premiums. For the car insurance, he has to pay 1500€, for the home insurance 400€.

It can be predicted, that he will cancel the car insurance with a probability of 0.3 and the home insurance with a probability of 0.6. These probabilities are multiplied by the corresponding amounts of premiums for the products. For each product a value of cancellation can be determined.

Taking this example, the value of cancellation for the car insurance is 450€ and for the home insurance 240€.

Additionally, it can be predicted that a customer will take a new life insurance in the following year, with a probability of 0.5. It will be expected that the life insurance will bring in 1000€.

Multiplying the probability, that a customer will take this new product by the expected amount of money for this product, you’ll then get a Cross-Selling-value for each product. In this example for the life insurance a value of 500€.

Further you can determine a value of claim for each product a customer possesses, through multiplying the probability of a claim within a specific product by the expected amount of money for the claim. For each product you’ll then get a value of claim.

In addition to this, a value of claim can also be determined for additional products through Cross-selling, like for the life insurance or the motorbike insurance.

The claim values for each product not in possession of a customer yet, can also be determined by multiplying the probability that a customer will draw on this product (for the life insurance 0.5), by the predicted probability of an expected claim (for the life insurance 0.01), by the expected amount of money for a claim (for the life insurance 20000€).

The activity-based costs are found with the SAS OROS Software and the interest rate of 8 per cent is assumed.
All components were inserted in this formula on the bottom and the whole term was discounted to today’s point of time.

In case under consideration, we will get a potential value for this specific customer of 790.74€.

15) But how can the specific values be determined?
As I mentioned before, the three values “value of cancellation”, “Cross-Selling Value” and “claim value” are calculated by multiplying the probability by the expected amount of money.

For each target variable, meaning the probability and the expected amount, I have created a data mining model with the use of SAS Enterprise Miner. With the help of this software it was possible to find out a customer’s specific value for each of the six target variables.

All the models with the different values ended up in an overlapping Mining model, where finally the potential of each customer was calculated.

16) Let me clarify this point by considering the “Cross-Selling-Value”.
First of all, I’ve created a model for the target variable “Cross-Selling-Probability”. The aim was to determine a probability, that a customer will buy Cross-Selling products in the following year. Therefore the SAS Enterprise Miner is essential. Based on historical data, the SAS Enterprise Miner determines components, which have an impact on the cross-selling probability. In this example the premiums for the life insurance, the cancellation probability and the age of a customer has an impact on the Cross-Selling probability.

17) Corresponding to this, I’ve created a second model for the target variable “Cross-Selling amount”. Based on historical data, variables with strong impact on the Cross-selling amount were discovered.
For example the total premiums in a year, the premiums for the life insurance and the amount of claims have an impact on the Cross-Selling amount.
After having found these impacts, the SAS Enterprise Miner automatically calculates a modelled value, based on this historical data and impacts, for the following year for each customer.

18) All the different models for the six target variables were combined in an overlapping model, where the present value of a customer was calculated and the future value was predicted.

Having found two values for each customer, the present and future value, I’ve created a portfolio with these two dimensions. All the customers with their different values could be inserted in the portfolio. Dividing the customers into different segments, according to their present and future value, you will notice that in this example there are many customers with middle present, but also with middle future values.

Let’s consider a specific segment. For example this one, where the customer possesses a low present and a high future value.

19) Looking at this segment, you will find out different characteristics of these customers. There are especially male persons between 30 and 40 years in this segment with low present and high future value.

20) According to these characteristics you can derive suitable actions for treating customers differently. For example currently profitable customers with high future potential should be tried to retain with more effort. Offering them special Cross- and Up-selling offers and involving them into special customer care actions can enhance their satisfaction and lengthen their relationship to a company.
21) Let me summarise briefly what I`ve said by considering the whole CLV-Management, which consists of different steps:

- First, you have to determine the specific components, which are important for a company to determine the CLV
- Next, the present value and the future potential of each customer is determined by using the SAS Software OROS and Enterprise Miner
- Consequently, the customers can be classified into different segments according to their present and future value
- After that, different marketing-, sales-, and service-actions can be derived for each customer segment
- At last, it is important to discover the characteristics of your highly profitable customers. As you know this target profile, it can be used to acquire more likely valuable new customers.

Thank you for your attention and if you have any further questions please feel free to contact me per e-mail or ask me now.