Marketing Analytics Tutorial 4

Analytics for Customer Management

Part A) Customer Lifetime Value

Exercise 1

A music subscription service charges its customers 9.99€ per month. The provider incurs monthly variable costs of 1.20€ and yearly marketing costs of 8€ per customer. Reviewing past customer data has shown that 10% of customers churn at the end of each month. Furthermore, customers tend to subscribe to the music service for 6 months. Assume a discount rate of 5%.

a) R offers the opportunity to create a user-defined function of the following general form:
`functionname <- function(arguments){body}`
We use this to define a function that calculates CLV (in the `body`) based on the provided information (`arguments`). Assign the function an appropriate name (`functionname`). Use the function to calculate CLV for customers of the music subscription service.

b) For the following tasks, first consider the resulting change in CLV theoretically, before using the function from a) to observe the difference. Assume the music subscription service is able to reduce its variable costs by 0.10€ per customer. What is the effect of the resulting higher margin on CLV?

c) As the music subscription service improves its interface and thereby ease of use, customers become more attached and tend to subscribe for longer than 6 months. They now stick to the service for 1 year on average. How does this affect the CLV?

d) Perhaps after initial market skepticism, subscribers become more familiar with the music service, now tending to create various playlists, and collecting and organizing most of their favorite tunes within the music service. This behavior leads to only 5% of customers switching to competitors per month. How is this change reflected in the CLV?

e) The discount rate represents the company's trade-off between current and future margins. Assume the music subscription service is planning to branch out and purchase its own record label. This impending investment effectively increases the cost of capital for the company in the short-term. What is the effect of the new discount rate of 8% on CLV?

f) Finally, assume the provider incurs a cost of 10€ for the acquisition of a new customer. This could arise through the introduction of a referral program, for example. How does this change CLV?

Part B) Acquisition vs Retention

Exercise 2

The music subscription service is considering to spend 60.000€ on an online advertisement campaign that is estimated to reach 90.000 Internet users. Thereby, the firm expects that 1.2% of those users will respond positively to the campaign, taking advantage of the special introductory offer. Assume the CLV of acquired subscribers is 30€. Due to the low price of the special offer, the service provider only earns a margin of 5€ on the initial purchase by the newly acquired customers.

a) Given the provided information, is the planned advertising campaign economically attractive for the firm?
   Hint: Think about lifetime value of the prospective customers.
b) What is the minimum acquisition rate required for the planned campaign to be economically successful?
c) Fast-forward to the following year. The music subscription service provider decided to run the campaign and was able to acquire 5.847 new customers this way. Furthermore, of the nearly 24.364 subscribers the firm had at the beginning of the year, 17.828 remained loyal, not unlikely due to the 25.000€ spent in retention efforts. Compute the average acquisition and retention costs incurred by the firm and discuss.

Exercise 3

Over time, the music subscription service has broadened its offer and now serves 3 different customer segments (regular, student, and family). Generally, all three types of subscribers have access to the same music database, but the specifics differ slightly.
First, the average customer tends to subscribe to the service for 5 years, earning the firm a monthly 7€ margin. Due to the referral program, the acquisition of such a new customer costs 10€. Next, enrolled students can subscribe to the service for a lower monthly cost, generating only a 4€ margin for the firm in each period. This type of customer stays for 4 years on average. In order to receive this lower offer, subscribers must prove their enrollment status and this check costs the music service provider 1€. Finally, the firm also offers a family plan at a higher price (15€ margin) that allows multiple people in the same household to share an account with different profiles. Market research has shown that this segment generally subscribes for a period of 2 years. The specialized advertisements targeting such families leads to an average cost of 5€ per family plan.

a) Calculate the lifetime value of a customer in each of the segments separately. The cost of capital is 12%. Are all types of subscribers profitable for the firm? Discuss.
   Hint: Assume constant churn and retention rate, as well as an infinite time horizon so that churn = 1 / expected lifetime.
b) Of the 20.000 subscribers, 1/3 are students, 1/6 are families, and the remainder are regular customers. Compute the CLV of each segment.