Class 3 Customer Lifetime Value

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Section 1

Customer Life Cycle

Class objectives

- Understand the concept of customer-centric marketing and customer lifecycle
- Understand the concept of customer acquisition cost (CAC) and how to compute it with R
- Understand the concept of Customer Lifetime Value (CLV) and how to compute it with R

From Campaign-Centric and Product-Centric to Customer-Centric Marketing

- Customer-centric marketing is a strategy that places the individual customer at the center of marketing design and delivery.
- **Acquisition**: persuade a prospect customer to purchase for the first time
- **Development**: Increase the customer's value by upselling higher-margin products or cross-selling complementary products and services
- **Retention**: keep the customer loyal to the brand

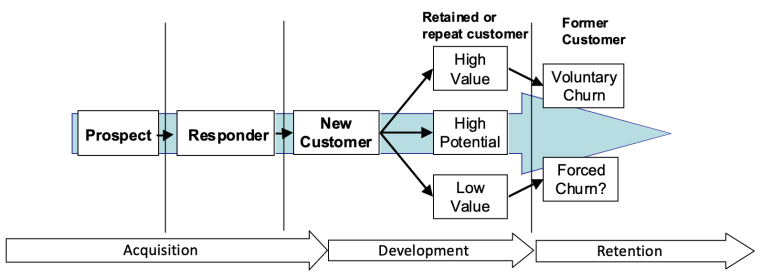


Figure 1: Customer Life Cycle

Section 2

Customer Acquisition Cost

Customer Acquisition Cost

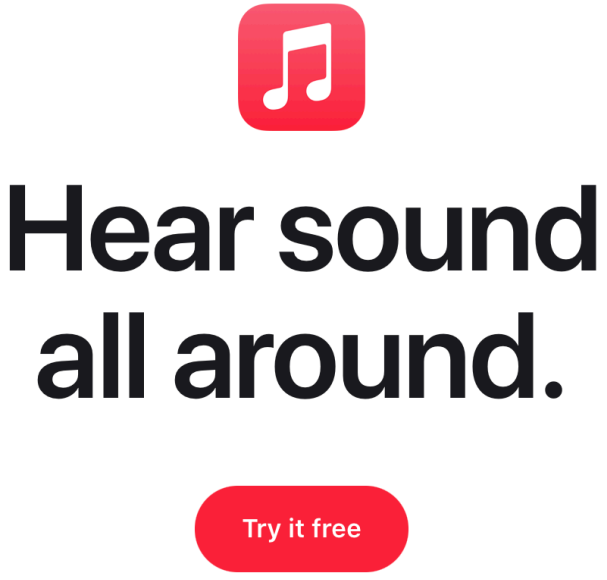
Definition

Customer Acquisition Cost (CAC) is the cost of converting a customer to purchase a product/service.

- Why should we care about CAC?
  - Acquiring new customers is not always beneficial if the costs of acquiring them exceed the revenue they generate.
  - For example, no company would want to spend £500 to acquire a new customer worth £300

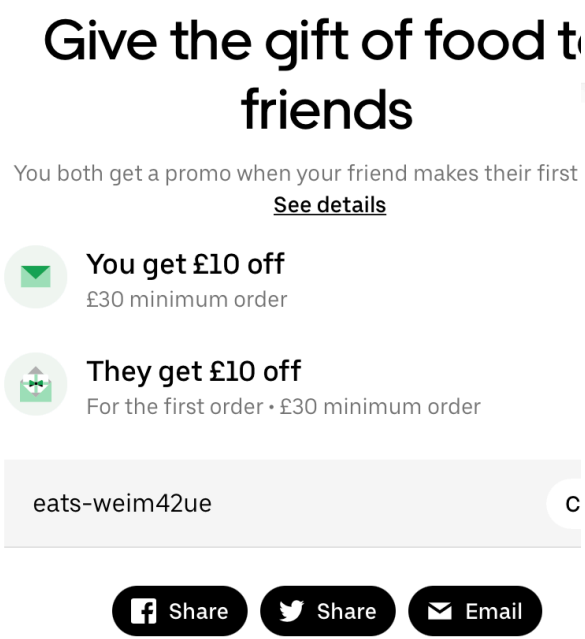
How to Acquire New Customers

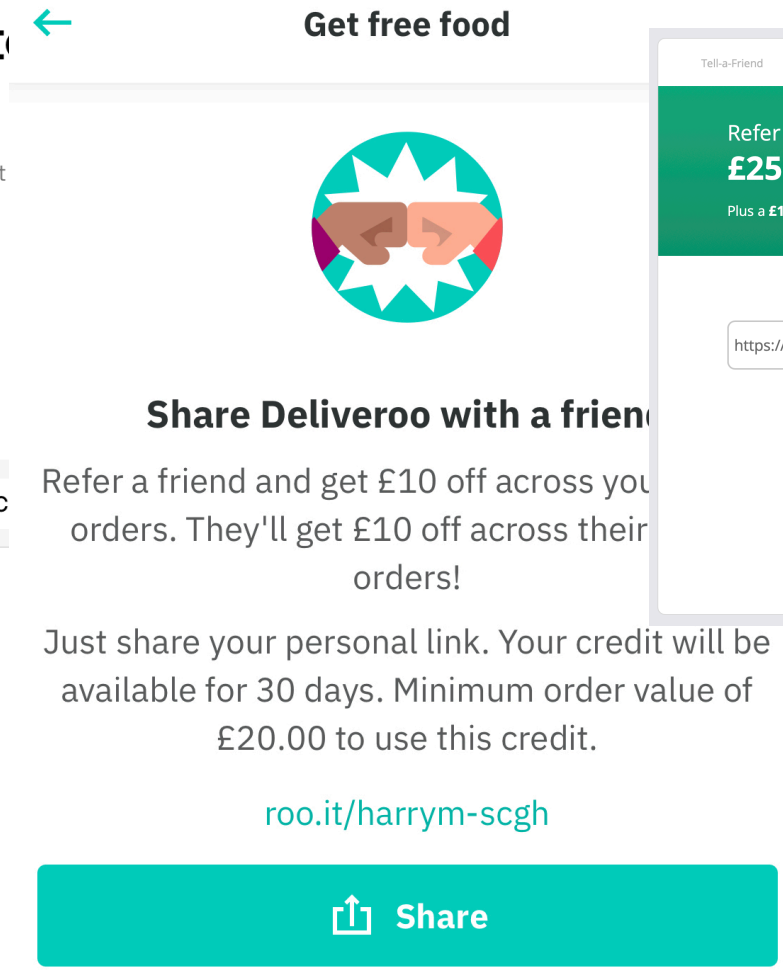
- Free sampling/trials

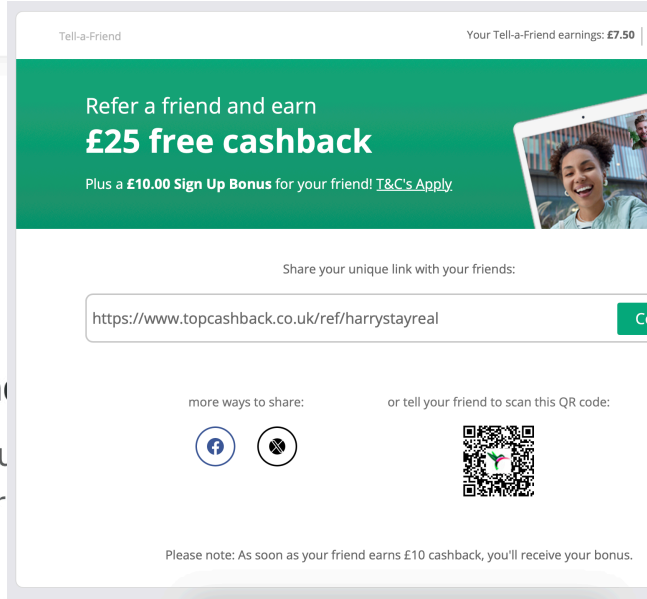


How to Acquire New Customers

- Referral Programs and Word of Mouth







Customer Acquisition Cost: Calculation

Definition

When the marketing cost can be attributed to individual customers, the CAC can be calculated as the cost of making a marketing offer divided by the response rate of the customer.

- Method 1: CAC = (# of offers needed to acquire 1 customer) * (cost of making a marketing offer)
- Method 2: CAC = (cost of making a marketing offer) / (customer response rate)

- After we study machine learning later in this module, we will be able to predict response rate for each individual customer and compute individual-specific CAC.

Customer Acquisition Cost: An Example

A new Bubble Tea shop MeowMeow Bubble Tea in Canary Wharf is contemplating whether or not to attract new customers by sending ads leaflets to nearby residents.

The cost of sending a leaflet, which includes production and labor costs, is **£0.5**.

1. Sending out leaflets randomly to all nearby residents
   - expected response rate of **1%**
2. Using names purchased from a marketing agency
   - each name costs **£0.2**
   - expected response rate of **4%** by analyzing the buying behavior and demographics of current customers

Compute the CAC for each choice.

Section 3

Customer Lifetime Value (CLV)

Customer Lifetime Value (CLV)

Definition

Customer lifetime value (CLV or LTV) is the total worth to a business of a customer over the whole period of their relationship.

- The underlying idea of CLV is essentially NPV, but at the customer level–Think of acquiring a new customer as an investment in an "asset" that can generate future cash flows.
- CLV is a key metric for customer-centric marketing. It helps companies to decide how much to spend on acquiring new customers and retaining existing customers.

CLV: Calculation

$$\text{CLV} = -CAC + \sum_{t=1}^{N} \frac{g_t * r^{(t-1)}}{(1+k)^t}, where g_t = M_t - c_t \quad (1)$$

- r is the average annual retention rate; $r^{(t-1)}$ is the cumulative retention rate in period t.
- N is the number of periods over which the relationship is calculated
- M_t is the profit margin the customer generates from buying products and services in period t
- c_t is the expected cost of variable marketing costs or other expenses to the customer in period t
- g_t is the net profit the customer generates in period t
- k is the rate for discounting future cash flows. The discount factor $d = 1/(1+k)$.

Retention Rate

- The churn rate, also known as the rate of attrition or rate of customer churn, is the rate (probability) at which customers stop doing business with the company. Sometimes we also use the term **retention rate**: retention rate = 1 - churn rate
  - The **aggregate churn rate** can be calculated as the number of customers lost during a certain time period divided by the number of customers at the beginning of that time period.
  - The **individual churn rate**: machine learning models to predict the churn rate of an individual customer (Week 5).
- We have made the following assumptions in the CLV formula in Equation 1:
  - The retention rate is constant over time; in reality, we can use machine learning models to predict the retention rate of an individual customer in each period (Week 5).
  - The first period retention rate is 100% (all customers stay with us after the first period).

Number of Years of Customer Relationship

- If we assume **infinite** customer economic life, we can simplify the formula into the following using the property of geometric sequence.

$$CLV_N = \sum_{t=1}^{N} \frac{gr^{(t-1)}}{(1+k)^t} => CLV_N = \mathrm{g} \cdot \frac{1 - \left(\frac{r}{1+k}\right)^N}{1+k-r} => CLV_\infty = \frac{g}{(1+k-r)}$$

- However, most of the time, we are more comfortable to assume **finite** customer economic life; we need to decide on a cutoff date for CLV calculation
  - Rule A: until the year when the $g = M - c$ becomes negative
  - Rule B: industry's average customer lifespan