Class 3 Customer Lifetime Value

Dr. Wei Miao

UCL School of Management

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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 Products to People: A More Modern Approach

- Last week, we looked at some powerful tools for understanding the financial viability of a product or marketing campaign: BEQ and NPV. These are essential, but they have their limitations.
  - BEQ tells us the minimum we need to sell to cover our costs. But it assumes a static environment where costs and prices don't change, and it doesn't tell us anything about who is buying our products or why.
  - NPV helps us understand the future profitability of an investment. However, it often treats revenue streams as anonymous numbers, without considering the source of that value – the customer.
- While these metrics are useful, they can lead to a product-centric mindset, where the primary focus is on selling more units. But what happens when the market changes, or a competitor offers a similar product for less? That's where customer-centric marketing comes in.

What is Customer-Centric Marketing?

- A customer-centric approach flips the traditional model. Instead of starting with a product and trying to find customers for it, you start with the customer and their needs. The goal is to build long-term, profitable relationships.
- A product-centric company is constantly chasing new sales, while a customer-centric company is nurturing relationships that will generate revenue for years to come.

Customer Life Cycle

- The **customer life cycle** is a term used to describe the progression of steps a customer goes through when considering, purchasing, using, and maintaining loyalty to a firm.
  - **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

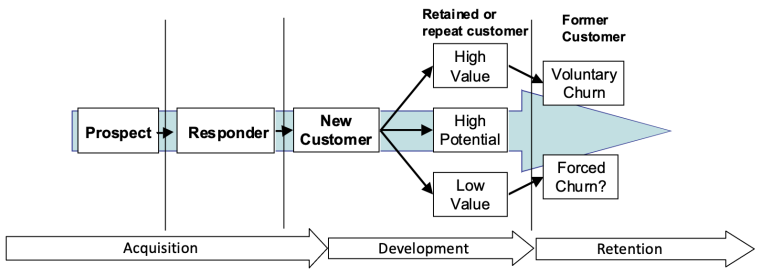


Figure 1: Customer Life Cycle

Section 2

Customer Acquisition Cost

Customer Acquisition Cost (CAC)

Definition

Customer Acquisition Cost (CAC) refers to the total expenses incurred by a business to acquire a new customer. This includes costs related to marketing, sales, and any other efforts made to attract and convert potential customers into actual buyers.

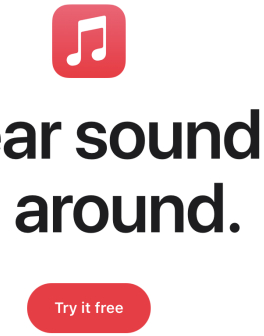
- Why should we care about CAC?
  - Acquiring new customers is not always beneficial if the costs of acquiring them exceed the revenue they generate.
  - For example, no company would want to spend £500 to acquire a new customer worth £300

How to Acquire New Customers

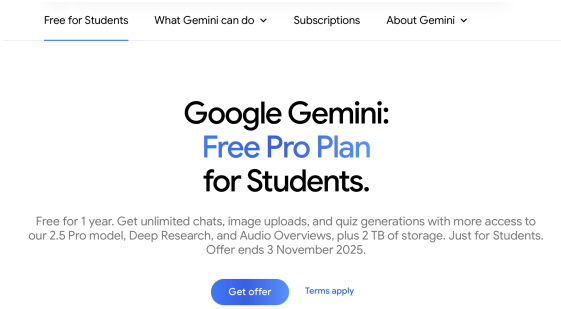
- Free sampling/trials



Physical free samples



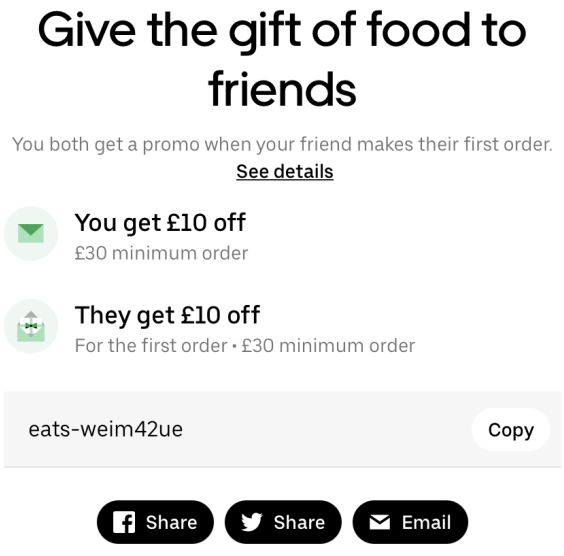
Digital free sample with zero marginal cost

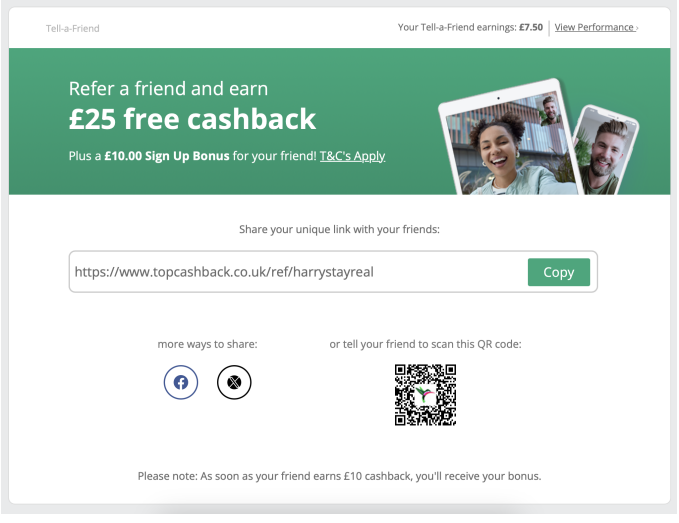


Digital free sample with considerable marginal cost

How to Acquire New Customers

- Referral Programs





link

Customer Acquisition Cost: Calculation

- 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.
  - CAC = (# of offers needed to acquire 1 customer) * (cost of making a marketing offer)
  - CAC = (cost of making 1 marketing offer) / (customer response rate)
- After we study machine learning later in this module, we will be able to predict the 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 to attract new customers by sending advertising leaflets to nearby residents.

The cost of sending a leaflet, which includes production and labour 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 analysing the buying behaviour 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

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

- r is the average retention rate for one period; $r^{(t-1)}$ 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 (sometimes denoted as CF)
- k is the discount 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 customer churn rate, 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: use machine learning models to predict the churn rate of an individual customer (Week 5).
- Assumptions in the CLV formula
  - The retention rate is constant over time.
  - 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 a 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 assuming **finite** customer economic life; we need to decide on a cutoff date for CLV calculation
  - Rule A: until the year when $g = M - c$ becomes negative
  - Rule B: industry's average customer lifespan