

## **Class 9 Case study: Improve Marketing Efficiency for Tesco Using Supervised Learning**

Dr Wei Miao

UCL School of Management

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## Section 1

# Business Objective

# Background

Tesco is looking to promote its new **private-label** products to existing customers. The marketing analytics team decides to use the conventional mailing marketing strategy so that customer would receive color-printed leaflets via Royal Mails to their doorsteps.

# Cost-Benefit Analyses

- **Cost:** Each mail costs **£1.5 to produce** and another **£0.5 to mail** to the customers.
- The cost is the marketing offer we send, `cost_per_offer`

```
1 # cost of sending an offer
2 cost_per_offer <- 1.5 + 0.5
3 cost_per_offer
```

```
[1] 2
```

# Cost-Benefit Analyses

- **Benefit:** If customer responds to the offer, the management expects customers to spend £20 on trying the new products, where the COGS is 60%.
- The benefit is the profit margin if a customer responds,  
profit\_per\_customer

```
1 # profit from a responding customer
2 COGS <- 0.6
3 profit_per_customer <- 20 * (1 - COGS)
4 profit_per_customer
```

```
[1] 8
```

## Break-Even Analysis: Break-Even Response Rate

- In order to break-even, we can calculate the break-even response rate from customers, which is the **minimum response rate** we need of a customer in order not to lose money from sending the marketing offer<sup>1</sup>

```
1 break_even_response <- cost_per_offer/profit_per_customer
2 break_even_response
```

```
[1] 0.25
```

- Only if a customer responds to us with at least 25% response rate can we recover the costs of making an marketing offer.
- If we send offers to customers whose expected response rate is lower than 25%, we make a loss by expectation.

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<sup>1</sup>The idea break-even is similar to the break-even quantity we learned in Week 1, the minimum incremental quantity we need to sell in order not to lose any money

## Section 2

# Data Analytics

# Data Analytics

- **Data collection and cleaning**
  - Split the data into a training set and a test set
- **Data analytics**
  - Train predictive models on the training set
  - Predict customer response rate on the test set
- **Business recommendations**
  - Target customers based on predicted response rate
  - Compute and compare ROIs for each targeting method: (1) blanket marketing; (2) decision tree; (3) random forest

**Let's work on the Quarto document together!**