Formulas Used in Cost and Economics in Pricing Strategy

Week 1

Markup Percentage
markup percent = (selling price - cost)/cost

Margin
margin = selling price - cost

M**argin Percent**
margin percent = (selling price - cost)/selling price

S**elling price**
selling price = cost/ (1 - margin %)

Use this formula when you have a **target margin**.

Profit
profit=quantity * (price - cost)

This is an example of a **profit function with the quantity expressed as a functional form**
Profit = (15 - 3P) * (price - cost)

F**unctional form**
Q = f(p)

Week 2

Cost-plus Pricing

Cost + markup = selling price

Target-cost Pricing

Target cost = market price - target margin

Unit Margin

Unit margin = margin/unit quantity

Consumption-adjusted margins

(unit margin) * (1 + % consumption expansion)

Break-even analysis

(1 + % consumption expansion) * (margin per unit on larger size) = smaller size unit margin

Week 3

Linear Regression

$\sim Q = a + b * Pi$

~Q = Predicted quantity sales
a = intercept
b = slope
Pi = price

Multiple Regression

$\sim Q = a + b_1 * Pi_1 + b_2 * Pi_2$

~Q = Estimate or forecast of unit sales
a = intercept
b_1 = slope of variable 1
Pi_1 = price of variable 1
b_2 = slope of variable 2

Pi_2 = price of variable 2

Linear Model or Demand Model

$$Q_x = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e_i$$

Q = dependent variable of quantity sold
X_1 = my own price
X_2 = price of a related good
X_3 = measure of disposable income
X_4 = trend variable
e_1 = error term

Price Elasticity

Definition of price elasticity $E = \%\Delta Q/\%\Delta P$ can also be written as $E = \Delta Q/\Delta P * P_1/Q_1$

E = elasticity
Δ = change
Q = quantity
P = price

Cross-Price Elasticity

Definition of cross-price elasticity $E_c = \%\Delta Q/\%\Delta P$ can also be written as $E_c = \Delta Q/\Delta P_O * P_O/Q$

E_c = cross-price elasticity
Δ = change
Q = quantity
P_o = competitor price

Income Elasticity

$E_i = \Delta Q/\Delta I * I/Q$

E_I = income elasticity

Δ = change
Q = quantity
I = income

Price Optimization Using Demand Information

π = (P - MC)Q

π = price
MC = marginal cost
Q = quantity sold

Week 4

$GP (contribution per period from active customers)

Contribution = Sales Price - Variable Costs

Simple CLV Model

t = 0	$GP - $R
t = 1	r $GP - r $R
t = 2	r^2 $GP - r^2 $R
t = 3	r^3 $GP - r^3 $R
	etc.

$GP = contribution per period from active customers
$R = retention spending per period per active customer
r = retention rate
d = discount rate per period

Measurement of CLV

CLV = present value of contribution margin - present value of marketing cost

$$CLV = \sum_{t=1}^{n} \frac{r^{(t-1)} M_t}{(1+i)^{(t-1)}}$$

M = amount of money you make per customer per period
r = retention rate
i = discount rate per period
n = number of periods to forecast

3-year CLV

CLV = M + Year 2 retention rate * (M/Year 2 discount rate) + (Year 3 retention rate*Year 2 retention rate) * (M/Year 3 discount rate)

Marginal Cost

Marginal cost = change in cost/change in quantity