

# **Marketing Strategy Issues:** **Customer Acquisition, Retention and Lifetime Value Analysis**

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## **Customer Acquisition, Retention and Lifetime Analysis**

- Management's ultimate (primary?) responsibility: maximize the value of shareholders' wealth
- Two key decisions in accomplishing this are:
  - Acquiring the "right kind" of customers
  - Retaining and developing the "right" existing Customers
- "Right Kind of Customers'?"
  - Monetary value of purchase / costs of serving
  - Frequency of purchase
  - Remain active over a long period of time

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**Table 1. Descriptive Data**

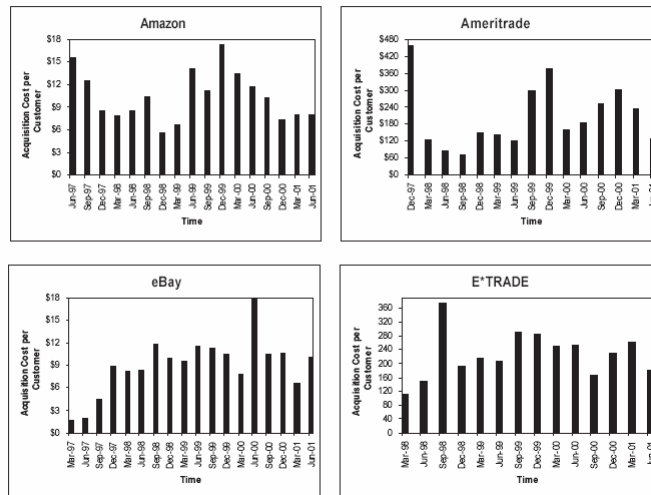
| Company    | Data Period |          | No. of Customers | Quarterly Margin <sup>1</sup> | Acquisition Cost <sup>2</sup> |
|------------|-------------|----------|------------------|-------------------------------|-------------------------------|
|            | From        | To       |                  |                               |                               |
| Amazon     | Jun 1997    | Jun 2001 | 35,100,000       | \$ 6.23                       | \$ 8.41                       |
| Ameritrade | Dec 1997    | Jun 2001 | 1,545,000        | \$ 83.79                      | \$ 229.25                     |
| eBay       | Mar 1997    | Jun 2001 | 34,100,000       | \$ 4.30                       | \$ 9.40                       |
| E*TRADE    | Mar 1998    | Jun 2001 | 3,828,610        | \$ 52.91                      | \$ 162.30                     |

1. Quarterly margin is per customer based on the average of the last four quarters.
2. Acquisition cost is per customer based on the average of the last four quarters and 80% retention rate.

Ref: Gupta, Lehmann & Stuart, MSI working paper, 2001

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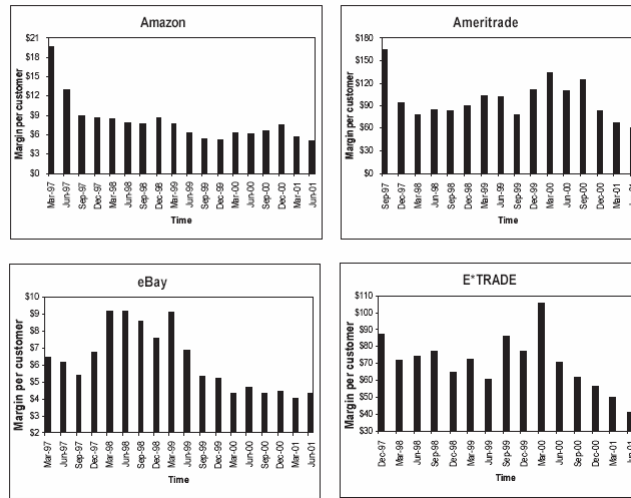
**Figure 3. Acquisition Cost per Customer**



Ref: Gupta, Lehmann & Stuart, MSI working paper, 2001

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Figure 2. Quarterly Margin Per Customer



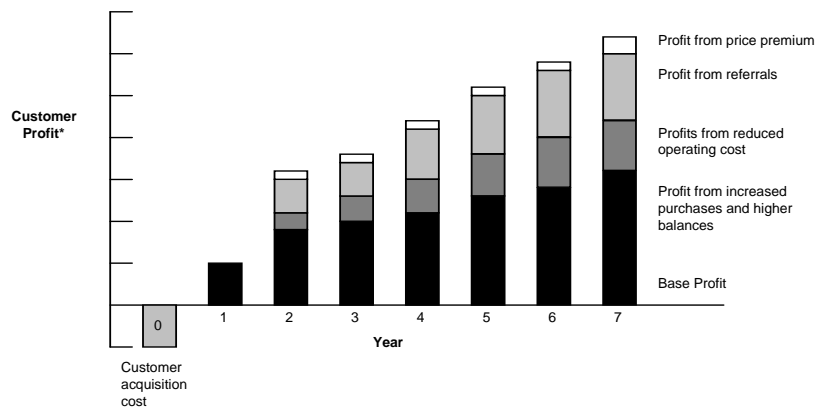
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Ref: Gupta, Lehmann & Stuart, MSI working paper, 2001

## Customer Acquisition, Retention and Lifetime Analysis

- Acquiring new customers vs. retaining existing customers

Why Customers are More Profitable over Time



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## Customer Acquisition, Retention and Lifetime Analysis

- Variation of profit over time

### Customer Profit Patterns over Time, Selected Service Industries

| Industry                           | Profit per Customer<br>(in dollars) by Year of Relationship |     |     |     |     |
|------------------------------------|---|-----|-----|-----|-----|
|                                    | 1   | 2   | 3   | 4   | 5   |
| Credit Card Issuance and Servicing | (21)*   | 42  | 44  | 49  | 55  |
| Industrial Laundry                 | 144   | 166 | 192 | 222 | 256 |
| Industrial Distribution            | 45  | 99  | 121 | 144 | 168 |
| Auto Servicing                     | 25  | 35  | 70  | 88  | 88  |

\* Figures in parentheses denote losses.

## Acquisition costs

### Acquisition Costs Vary Dramatically

#### NEW CUSTOMER ACQUISITION COSTS FOR SELECTED NET RETAILERS

| Retailer        | Amazon.com       | eBay            | Outpost.com | Preview Travel    |
|-----------------|------------------|-----------------|-------------|-------------------|
| Customer Metric | Customer Account | Registered User | Customer    | Registered Member |
| Q1 '98*         | \$24.89          | \$8.81          | N/A         | N/A               |
| Q2 '98          | \$26.97          | \$9.24          | N/A         | \$5.00            |
| Q3 '98          | \$31.26          | \$13.23         | N/A         | \$5.00            |
| Q4 '98          | \$28.53          | \$10.65         | N/A         | \$11.25           |
| Q1 '99          | \$27.61          | \$7.45          | \$93.23     | \$8.75            |
| Q2 '99          | \$37.37          | \$12.73         | \$143.32    | \$9.66            |

\* OUTPOST.COM'S FISCAL YEAR ENDS IN FEBRUARY. ITS Q3 AND Q4 1999 COSTS ARE \$176.53 AND \$128.20, RESPECTIVELY. SOURCE: THE YANKEE GROUP FROM COMPANY FINANCIAL REPORTS

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## Customer Equity

- What is Customer Equity?
  - Discounted present value of all future customer revenue streams net of acquisition costs, product and servicing costs, and retention costs
  - plus*
  - Net present value of profits generated from customer recommendation

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## Measuring Customer Equity

- What do we need to know?
    - Relationship between acquisition spending and acquisition rate
    - Likewise, for customer retention
    - Margin per transaction per retained customer
    - Profit from customer recommendation
    - Discount factor
  - Analytical Method
    - Analyze acquisition and retention
    - Take as given margin and discount rate
- Blattberg and Deighton (1996)

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### Measuring Customer Equity (Contd..)

- Firms need to invest in order to acquire and retain customers
- Customer Equity = Customer Value in Year 1 + Value from Year 2 onwards
- Customer value in Year 1=  
**Acquisition Rate(a) \* Margin on Sale(\$m) – Cost of Acquisition/Prospect (\$A)**
- a = fraction of prospects that make a first purchase
- Acquisition rate  $a = a_c * (1 - \exp(-k_1 * \$A))$   
     $a_c$  is the maximum (ceiling) attainable acquisition rate  
     $k_1$  is the coefficient of acquisition

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### Measuring Customer Equity (Contd..)

- Acquisition rate  $a = a_c * (1 - \exp(-k_1 * \$A))$   
     $a_c$  is the maximum (ceiling) attainable acquisition rate  
     $k_1$  is the coefficient of acquisition
- Question: How do you determine the unknown parameters?  
**–  $a_c$  and  $k_1$**
  - Two methods
    - Use historical data / Regression analysis
    - Decision Calculus

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### Decision Calculus Approach

- Ask yourself (or the decision maker two questions)
  - Q1: What did you spend per prospect last period ( $\$A_t$ ),  
and  
what fraction of prospects did you convert( $a_t$ )?
  - Q2: What is the maximum number of prospects that you could have converted if you had an "unlimited" budget?
- Answer to Q2 gives the value for  $a_c$
- Answer to Q1 can be substituted into the Acquisition rate equation:

$$a_t = a_c * (1 - \exp(-k_1 * \$A_t))$$

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### Decision Calculus Approach

$$a_t = a_c * (1 - \exp(-k_1 * \$A_t))$$

- In the above equation,  $a_t$ ,  $\$A_t$ ,  $a_c$  are known.  
So  $k_1$  can be computed

$$k_1 = (1 / A_t) * [\ln(a_c) - \ln(a_c - a_t)]$$

- Hence, given any value of  $\$A$ , you can then predict what the acquisition rate will be
- And the Optimal Level of Acquisition spending  $\$A_o$  is given by:

$$\$A_o = (1 / k_1) * \ln(m * k_1 * a_c)$$

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### Customer Value from Year 2

- If the company spends \$R per year per customer to retain, and retains a fraction r of customers. The effective cost per retained customer is: \$R / r.
- The fraction of retained customers, r would depend on \$R as follows:
 
$$r = r_c * (1 - \exp(-k_2 * \$R))$$
- To estimate  $r_c$  and  $k_2$  ask yourself two questions:
  - Q1: What did you spend per customer last period ( $\$R_t$ ), and what fraction customers did you retain ( $r_t$ )?
  - Q2: What is the maximum number of customers that you could have retained if you had an "unlimited" budget
- Answer to Q2 gives the value  $r_c$
- Answer to Q1 can be substituted into the Acquisition rate equation:
 
$$r_t = r_c * (1 - \exp(-k_2 * \$R_t))$$
- In the above equation  $r_t$ ,  $\$R_t$ ,  $r_c$  are known. So  $k_2$  can be computed
 
$$k_2 = (1 / R_t) * (\ln(r_c) - \ln(r_c - r_t))$$
- Hence, given any value of \$R, you can then predict the retention rate

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### Computing Customer Equity (Contd..)

- If the firm continues to make a margin of \$m per retained customer, the value of the retained customer for 1 year is = (\$m - \$R/r)
- The infinite stream of discounted profits per retained customer from year 2 onwards discounted to year 1 is: (\$m - \$R/r) \* ( $\rho + \rho^2 + \dots$ ) where
 
$$\rho = r / (1 + d), \text{ and}$$

$$d = \text{rate of return for marketing investments}$$
- This calculation is conditional on the customer being acquired in the first place. Hence, the per customer value from year 2 is
 
$$a * (\$m - \$R/r) * (\rho / (1 - \rho))$$
- Customer Equity = Customer Value in Year 1 + Value from Year 2
 
$$CE = a * (\$m) - \$A + a * (\$m - \$R / r) * (\rho / (1 - \rho))$$
- We can determine \$R to maximize customer equity (and also \$A if need be)

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### Computing Customer Equity

- Refining the Blattberg and Deighton analysis
  - Incorporating covariates  
(type of mailings, quality of lists,.....)
  - Incorporating prospect demographic variables and customer heterogeneity
  - Relaxing the assumption of independent acquisition and retention processes

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### Lifetime Value Computation for Brita

#### Proceeds on acquisition

- Contribution on acquisition (per pitcher margin) \_\_\_\_\_
- Promotion to generate FY 1998 pitcher sales per pitcher \_\_\_\_\_
- Advertising to generate pitcher sales (Note need to assume a proportional split in Ad \$ to generate pitcher & filter sales) \_\_\_\_\_
- Net profit per pitcher sale \_\_\_\_\_

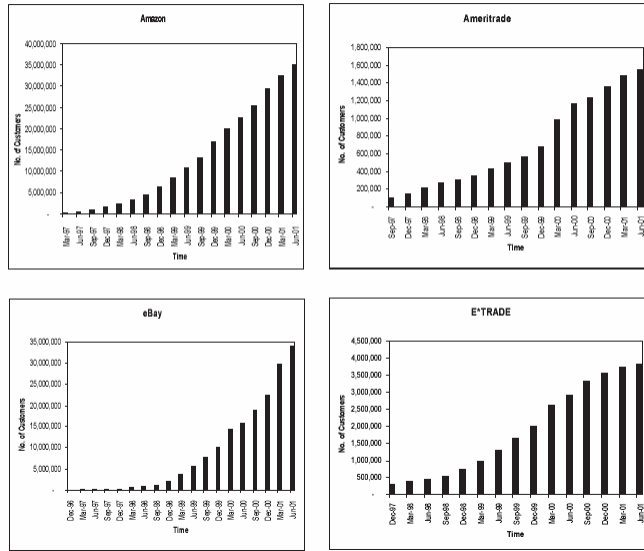
#### Proceeds from retention

- Contribution from retention (depends on % retained & # of - Filters per retaineer) \_\_\_\_\_
- Promotion to generate filter sales for the # in previous step \_\_\_\_\_
- Advertising to generate filter sales (see note for pitchers) \_\_\_\_\_
- Net profit / year on filter sales \_\_\_\_\_
- Discounted flow over appropriate number of years \_\_\_\_\_
- Present value from 1 customer's pitcher purchase \_\_\_\_\_

Note that for faucets, also need to consider the "optimal" marketing program based on Vantis' projections

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Figure 1. Number of Customers



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Ref: Gupta, Lehmann & Stuart, MSI working paper, 2001