Two Sides of Customer Value:

Economic Value to the Customer (EVC)
and
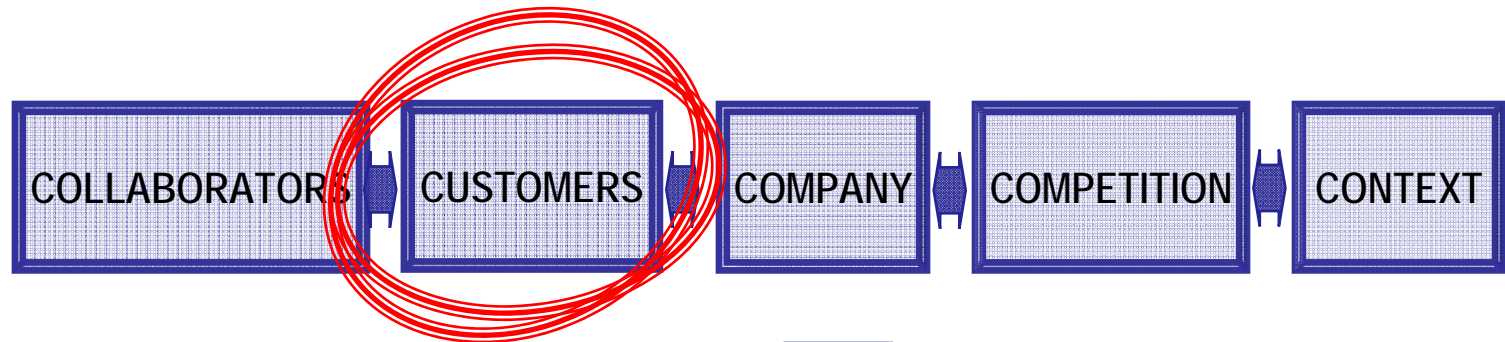## Life Time Value of a Customer (LTV)

Session 4
Marketing Management
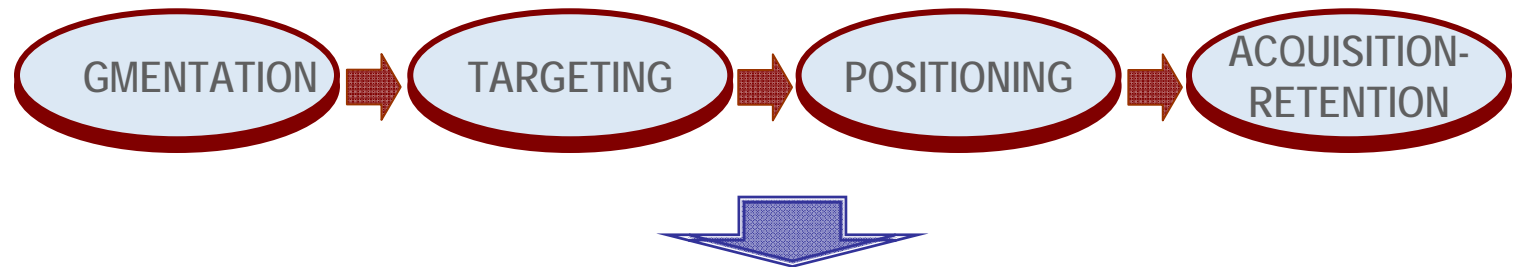Prof. Natalie Mizik

Marketing Management: The Big Picture

I. Situation Analysis (5Cs)

COLLABORATORS ⟷ CUSTOMERS ⟷ COMPANY ⟷ COMPETITION ⟷ CONTEXT

⬇

II. Set Strategy (STP)

GMENTATION ➡ TARGETING ➡ POSITIONING ➡ ACQUISITION-RETENTION

⬇

III. Formulate Marketing Programs (4Ps)

PRODUCT ⟷ PRICE ⟷ PROMOTION ⟷ PLACE

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Sources of Customer Value

Psychological

Customer Value

Economic   **Functional**
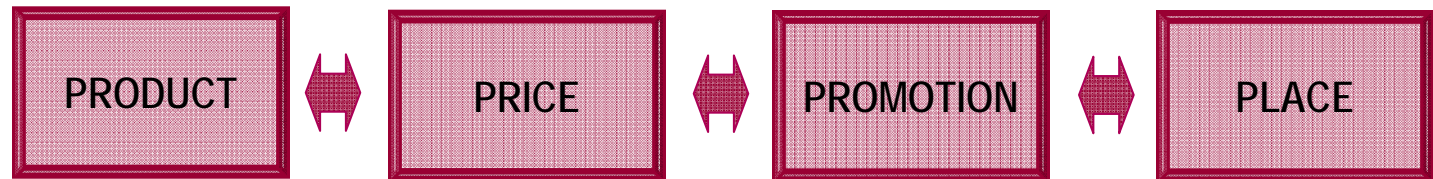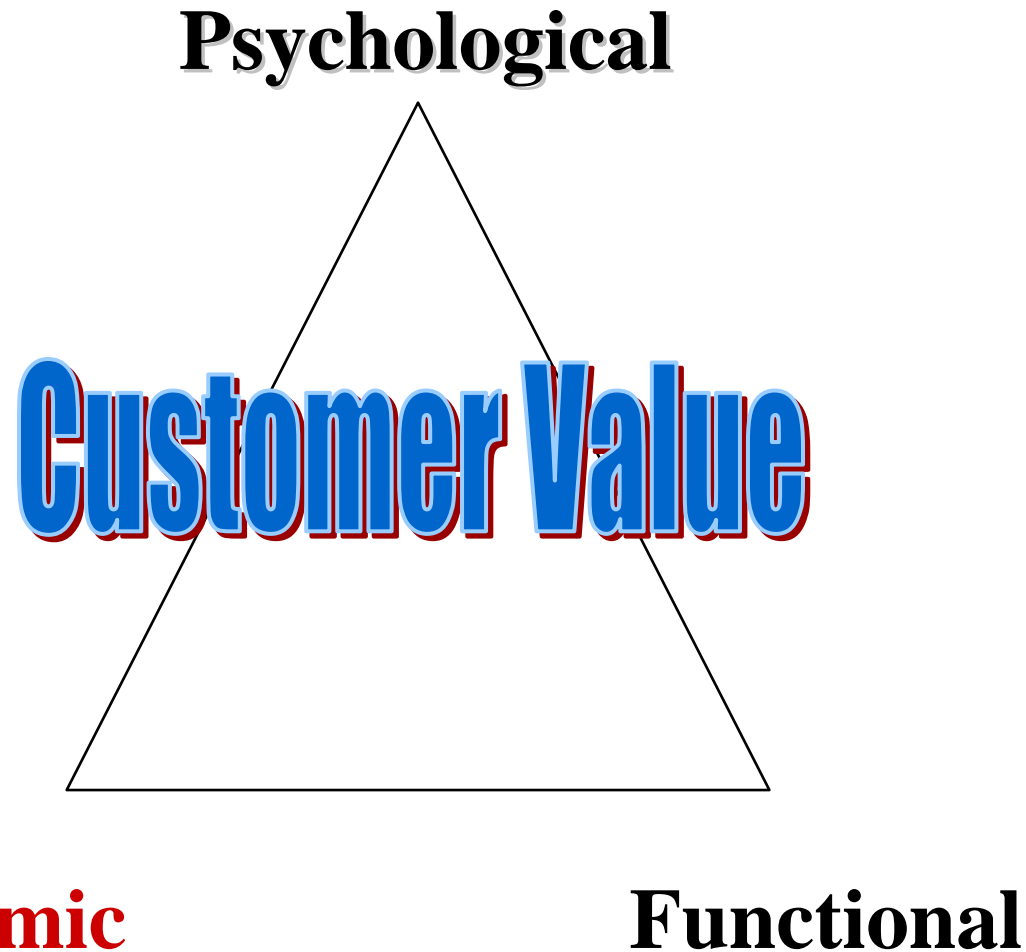
1. Economic Value to Customers

- **EVC** is the total (life-cycle) cost savings from using a new product in place of a current product.

- **EVC** = (Total ownership cost of existing product) – (Total ownership cost of new product)

- **Maximum Willingness to Pay** = Total lifecycle savings from new product compared with old product
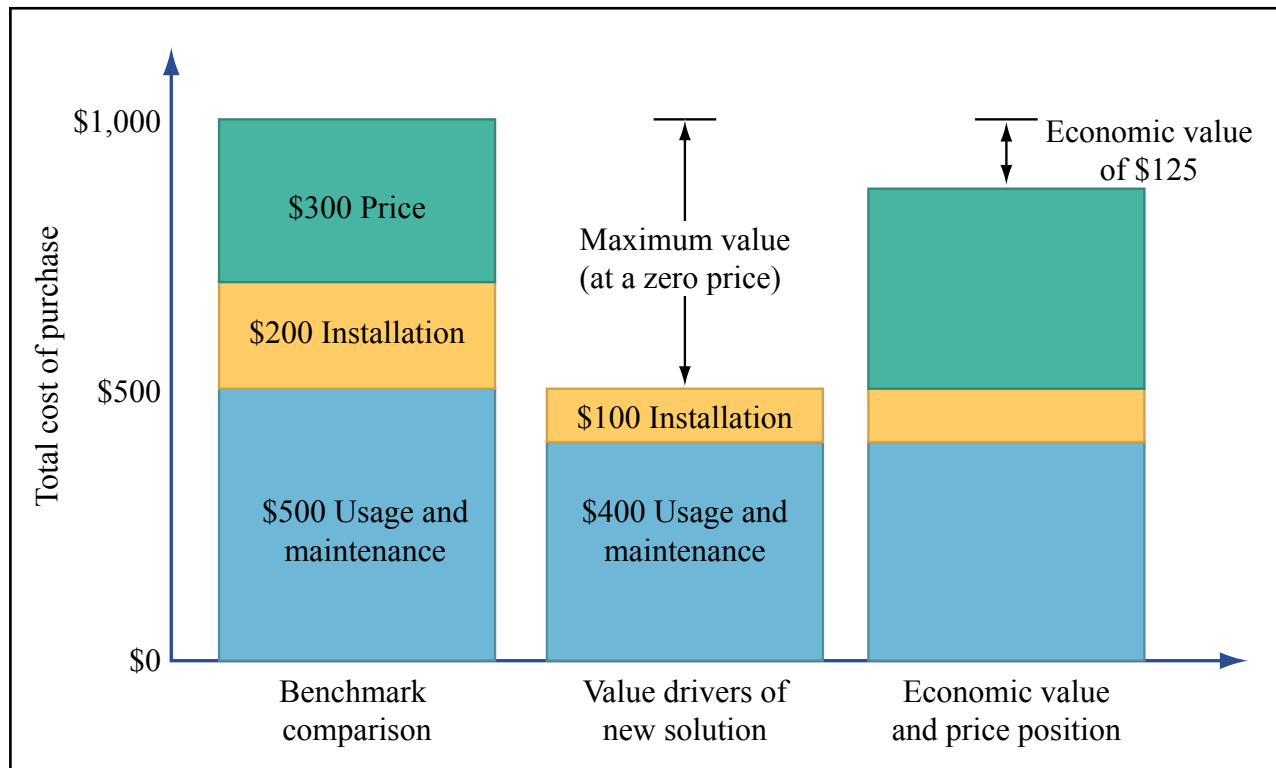
Example: New Telecom Switch

Image by MIT OpenCourseWare.

Sources of EVC

Total cost of purchase

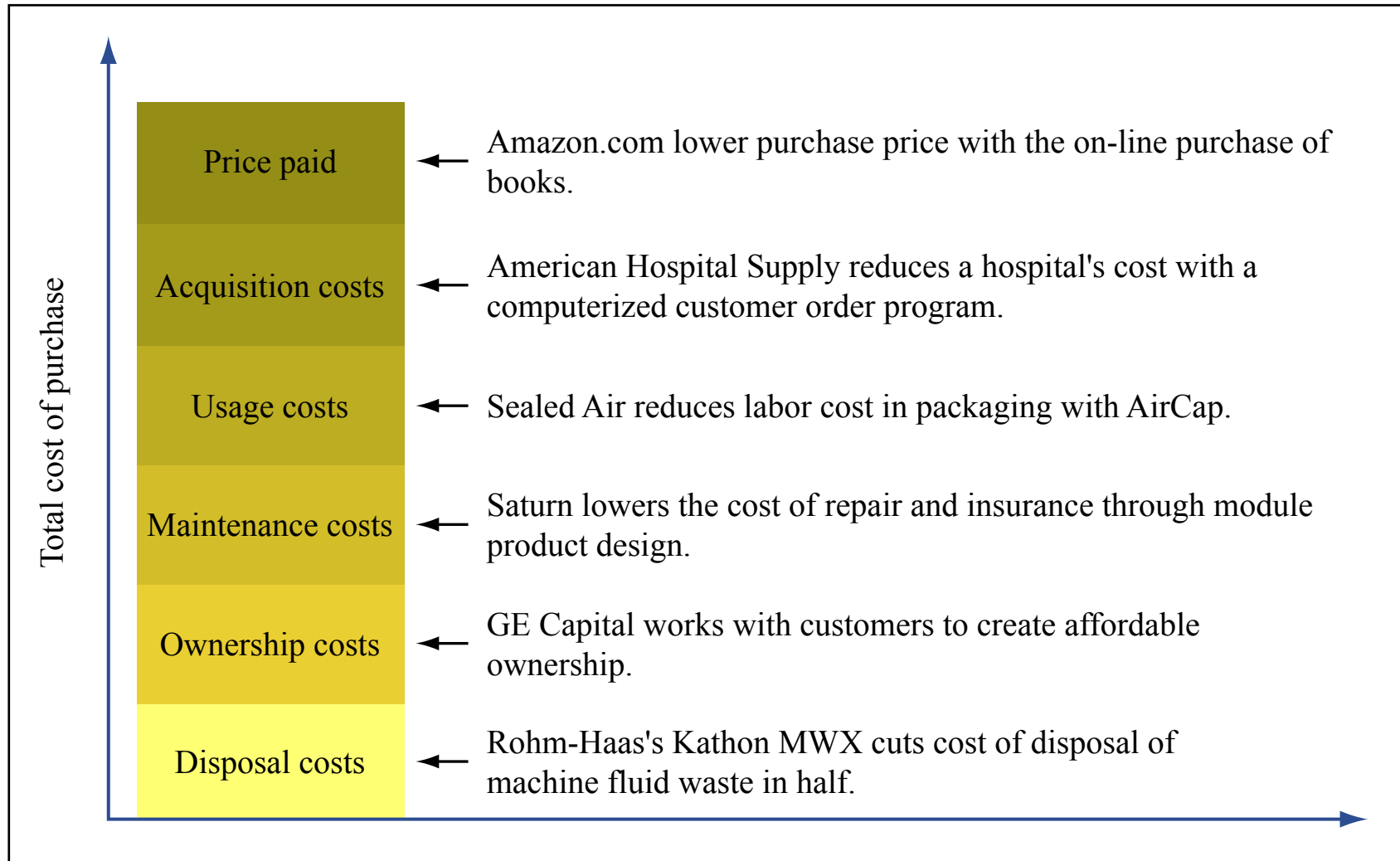|	
Price paid	← Amazon.com lower purchase price with the on-line purchase of books.
Acquisition costs	← American Hospital Supply reduces a hospital's cost with a computerized customer order program.
Usage costs	← Sealed Air reduces labor cost in packaging with AirCap.
Maintenance costs	← Saturn lowers the cost of repair and insurance through module product design.
Ownership costs	← GE Capital works with customers to create affordable ownership.
Disposal costs	← Rohm-Haas's Kathon MWX cuts cost of disposal of machine fluid waste in half.

Image by MIT OpenCourseWare.

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Example

- Lasik
- The Canon and Lexmark printers are the cheapest, or are they?

▲ High scores are best. ▼ Low scores are best. Bold type denotes first place.	Black pages output ▲	Color pages output ▲	Cost per page ▼	Printer cost ▼	Total cost of ownership for 1 year ▼	Total cost of ownership for 3 years ▼
Canon i250 Color Bubble Jet	103	387	6¢	**$49.99**	$227.04	$541.13
Canon i350 Color Bubble Jet	111	382	6¢	$59.99	$229.69	$529.08
Epson Stylus C84	671	1,410	3¢	$100.00	**$198.00**	**$354.00**
HP Business Inkjet 1100d	**1,326**	**3,378**	**2¢**	$199.99	$271.99	$375.99
HP Deskjet 5150	381	310	8¢	$99.99	$336.62	$769.90
HP Deskjet 5650	456	456	6¢	$149.99	$333.86	$661.61
HP Deskjet 6127	673	902	4¢	$249.99	$380.22	$600.70
Lexmark Z605 Color Jetprinter	173	694	12¢	$50.00	$387.25	$1,021.74
Lexmark Z705 Photo Jetprinter	288	1,127	8¢	$80.00	$296.44	$689.31
RED denotes Editors' Choice.						

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Example

- A new synthetic motor oil is about to be introduced with the primary benefit that it needs to be changed less frequently, specifically once every year regardless of the mileage. Assuming current oils need to be changed every 3,000 miles at a cost of $30 per change (oil at a dollar a quart or a total of $5 per car, labor $20, disposal of oil $5) for an average car. What is the EVC of the new oil to a car driver who drives 15,000 miles per year?

EVC by Customer

	New Product	Old Product		
		Low Mileage (3,000)	Average Mileage (15,000)	High Mileage (45,000)
Product Price	???	1 x 5 = 5	25	15x 5 = 75
Labor Costs	20	1 x 20 = 20	100	15 x 20 = 300
Other Costs (disposal fee)	5	1x 5 = 5	25	15 x 5 = 75
TOTAL COST	25 + price	30	150	450
EVC		5	125	425
EVC/Quart		1	25	85

Issues in Using EVC

- Customer differences
  - High vs. low mileage drivers.

- Convincing customers

- Other (fuzzy) benefits ignored

- BUT, EVC can be useful in
  - Pricing
  - Segmentation
  - New product introduction

What is Customer Lifetime Value (CLV aka LTV)?

- ## Customer Lifetime Value

    is the net present value of all future streams of profits that a customer generates over the life of his/her business with the firm
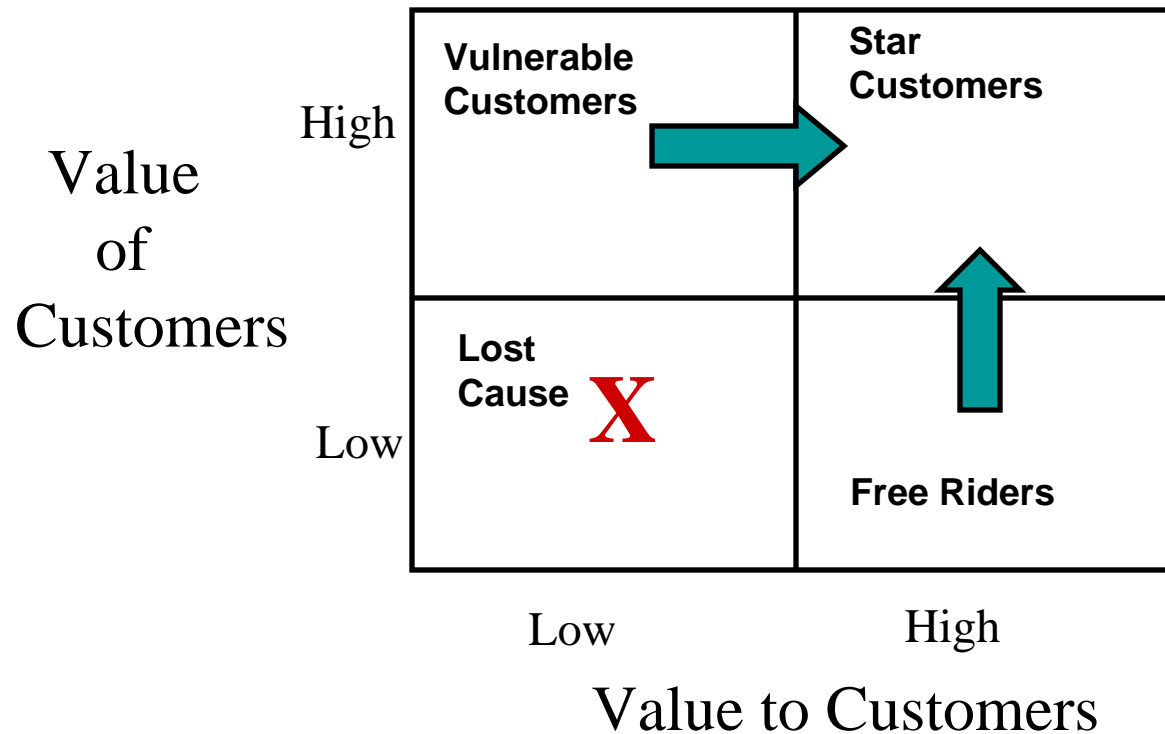
Creating or Destroying Value?

"In the United States, top executives **lose their jobs** when their companies sell too little. In Britain, it can happen when their companies **sell too much**."

—The New York Times, March 31, 1993

The Two Sides of Customer Value

Appropriating Value

Value of Customers

High

Low

Vulnerable Customers

Star Customers

Lost Cause **X**

Free Riders

Low   High

Value to Customers

Creating Value

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Value of Tennis Club Member

You own a tennis club where the annual membership fee is $300. The average club member spends about $100 dollars a year at the club (in balls, drinks, snacks, etc.). The annual cost of these miscellaneous goods (the balls, drinks, snacks, etc.) to you is $40 per player. On average people who join a tennis club have a playing career of 7 years. Historically, 65% of the members in a given year rejoin the following year. Investing capital at the going rate would earn a return of 8% a year. Based on this information, what is the long-term value of a customer?
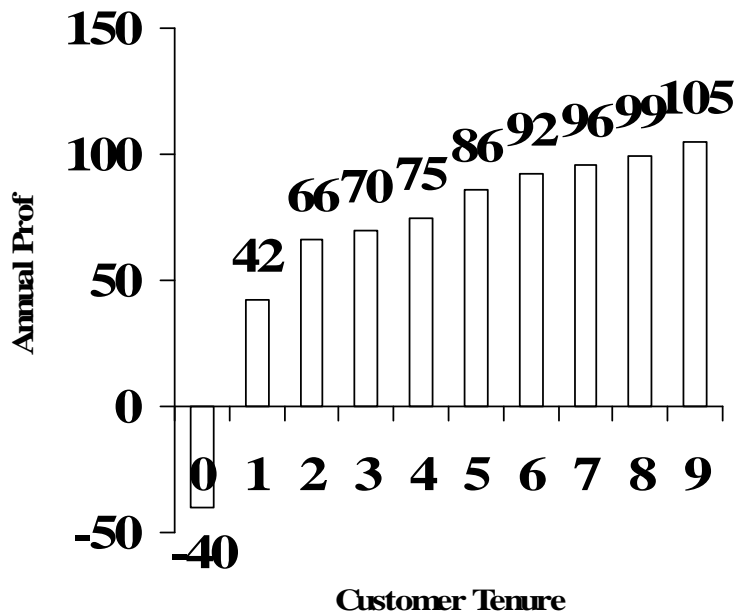
LTV Calculations

	Annual profit	Retention Probability	Expected profit	Discount factor	Expected discounted profit
Assumptions	Constant	r = .65		d = .08	
Year (A)	(B)	(C)	(D) = (B) x (C)	(E)	(F) = (D) x (E)
0	360	1.00	360.00	1.00	360.00
1	360	0.65	234.00	0.93	216.67
2	360	0.42	152.10	0.86	130.40
3	360	0.27	98.87	0.79	78.48
4	360	0.18	64.26	0.74	47.23
5	360	0.12	41.77	0.68	28.43
6	360	0.08	27.15	0.63	17.11

LTV = 878.32

Profit and Defection Patterns
Credit Card Industry

Profit Pattern

Bar chart — Annual Prof (y-axis, -50 to 150) vs Customer Tenure (x-axis, 0 to 9):
0: -40, 1: 42, 2: 66, 3: 70, 4: 75, 5: 86, 6: 92, 7: 96, 8: 99, 9: 105

Defection Pattern

Bar chart — Accounts Remain (y-axis, 0 to 120) vs Customer Tenure (x-axis, 0 to 9):
0: 100, 1: 82, 2: 76, 3: 70, 4: 66, 5: 60, 6: 56, 7: 47, 8: 40, 9: 34
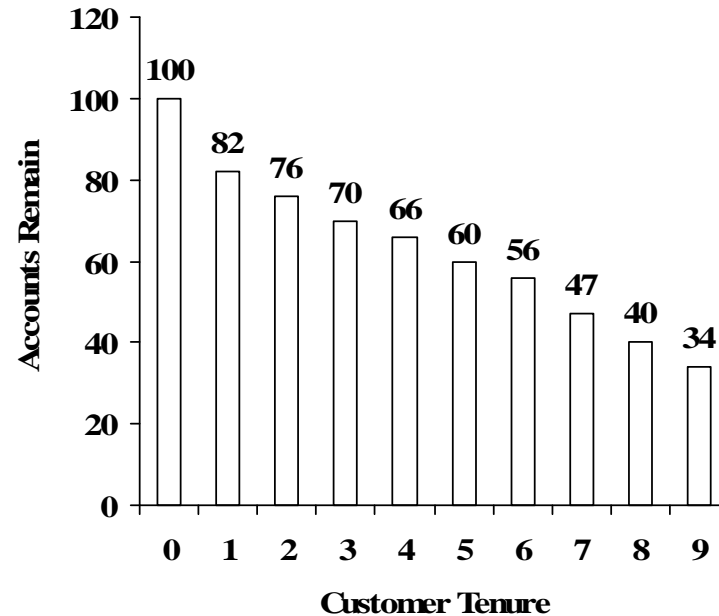
$$CLV = \frac{(\$42)*(.82)}{(1+0.1)} + \frac{(\$66)*(.76)}{(1+0.1)^2} + ... \longrightarrow \frac{(m)(r)}{(1+i)} + \frac{(m)(r^2)}{(1+i)^2} + ... - AC$$

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Measuring Customer Value

- Lifetime value of a customer assuming infinite horizon:

$$LV = m\left(\frac{r}{1+i-r}\right) - AC$$

m = margin
i = discount rate
r = retention rate
AC = acquisition cost

Economics of Customer Acquisition for FedEx

- 140 accounts in advertising industry use 2,285 Courier Paks (CP) per month

- CP price is $12.50 and variable cost is $4.25

- Retention rate = 0.9, discount rate = 12%

- What is the maximum FedEx should be willing to spend to acquire a new account in this industry?

Margin Multiple
Constant Margins

$$\frac{r}{1+i-r}$$

Retention Rate	Discount Rate			
	10%	12%	14%	16%
60%	1.20	1.15	1.11	1.07
70%	1.75	1.67	1.59	1.52
80%	2.67	2.50	2.35	2.22
90%	4.50	4.09	3.75	3.46

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Margin Multiple
Growth in Margins

$$\frac{r}{1+i-r(1+g)}$$

Retention Rate	Growth Rate				
	0%	2%	4%	6%	8%
60%	1.15	1.18	1.21	1.24	1.27
70%	1.67	1.72	1.79	1.85	1.92
80%	2.50	2.63	2.78	2.94	3.13
90%	4.09	4.46	4.89	5.42	6.08

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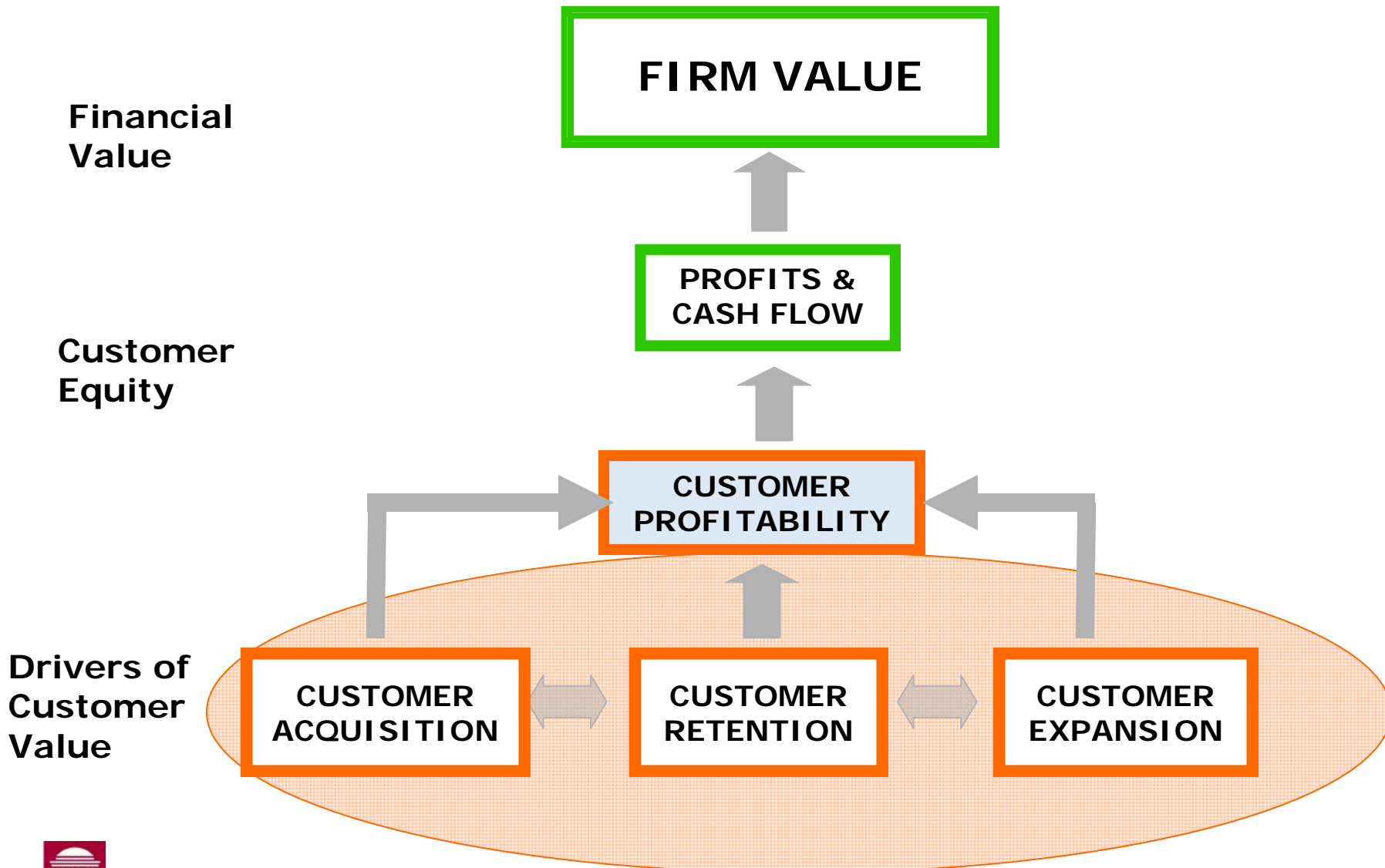# Increasing Customer Equity:

Three strategies:

I. Customer acquisition (gain new customers)

II. Customer expansion

III. Customer retention

$$LV = m\left(\frac{r}{1+i-r}\right) - AC$$

Drivers of CLV

Financial Value

FIRM VALUE

PROFITS & CASH FLOW

Customer Equity

CUSTOMER PROFITABILITY

Drivers of Customer Value

CUSTOMER ACQUISITION ↔ **CUSTOMER RETENTION** ↔ **CUSTOMER EXPANSION**

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I. Customer Acquisition Strategies

- Marketing   E*Trade

- Affiliations   amazon.com

- Merges and Acquisitions   AT&T

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Customer Acquisition Costs by Marketing Activity

Activity	Cost per New Customer	Cost per Solicitation
Personal selling	$500	$100.00
Direct mail	$115	$1.50
Telemarketing	$95	$3.30
Web site, e-mail	$30	$0.06

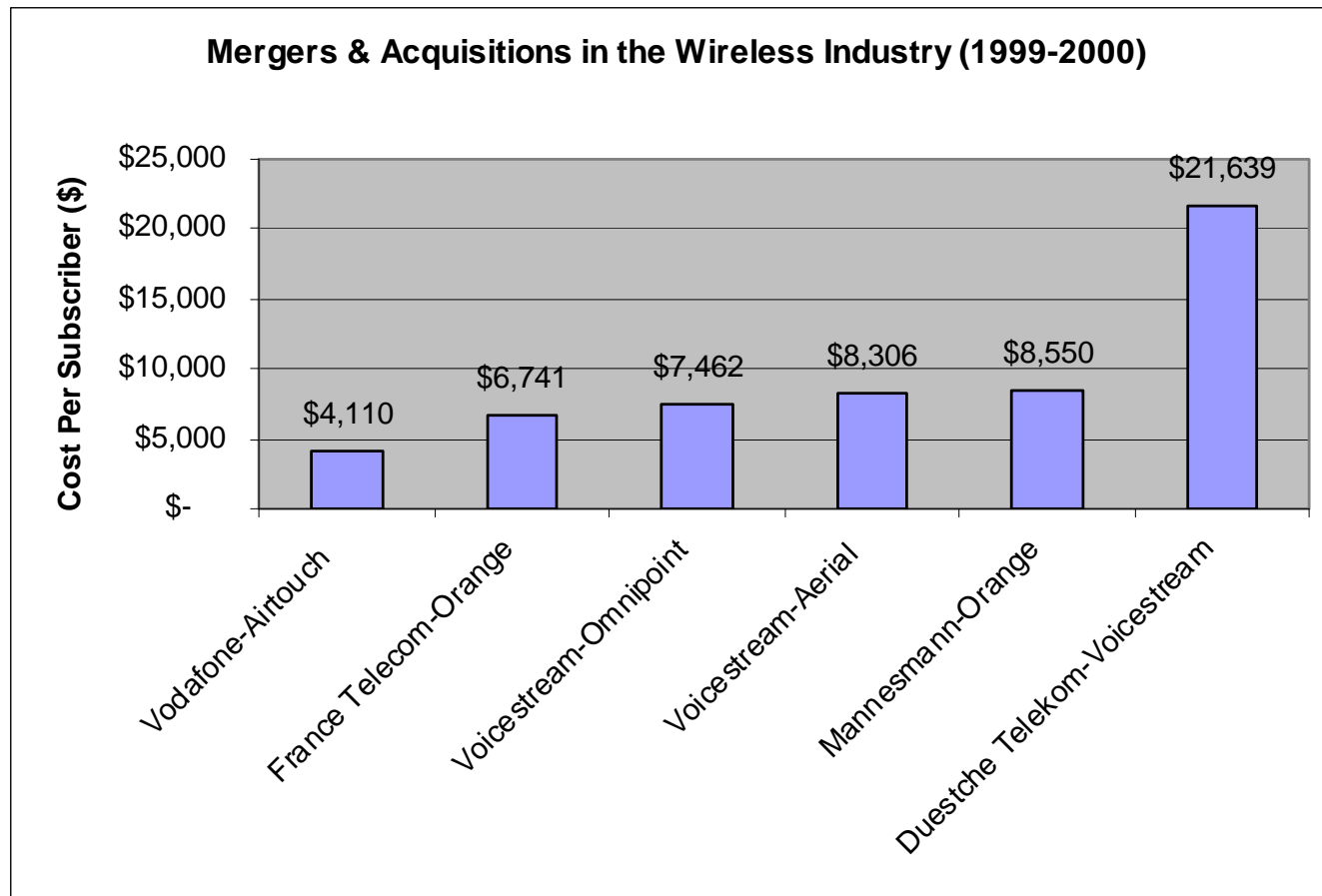1. Costs are based upon typical industry averages. Response rates are implied.

2. Actual costs vary from business to business depending on the complexity of the sales process.

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Mergers & Acquisitions in the Wireless Industry (1999-2000)

Mergers & Acquisitions in the Wireless Industry (1999-2000)

Cost Per Subscriber ($)

| Company	Cost Per Subscriber
Vodafone-Airtouch	$4,110
France Telecom-Orange	$6,741
Voicestream-Omnipoint	$7,462
Voicestream-Aerial	$8,306
Mannesmann-Orange	$8,550
Duestche Telekom-Voicestream	$21,639

Source: Based on data from *The Industry Standard*, Aug 7, 2000 and *Business Week*, August 7, 2000

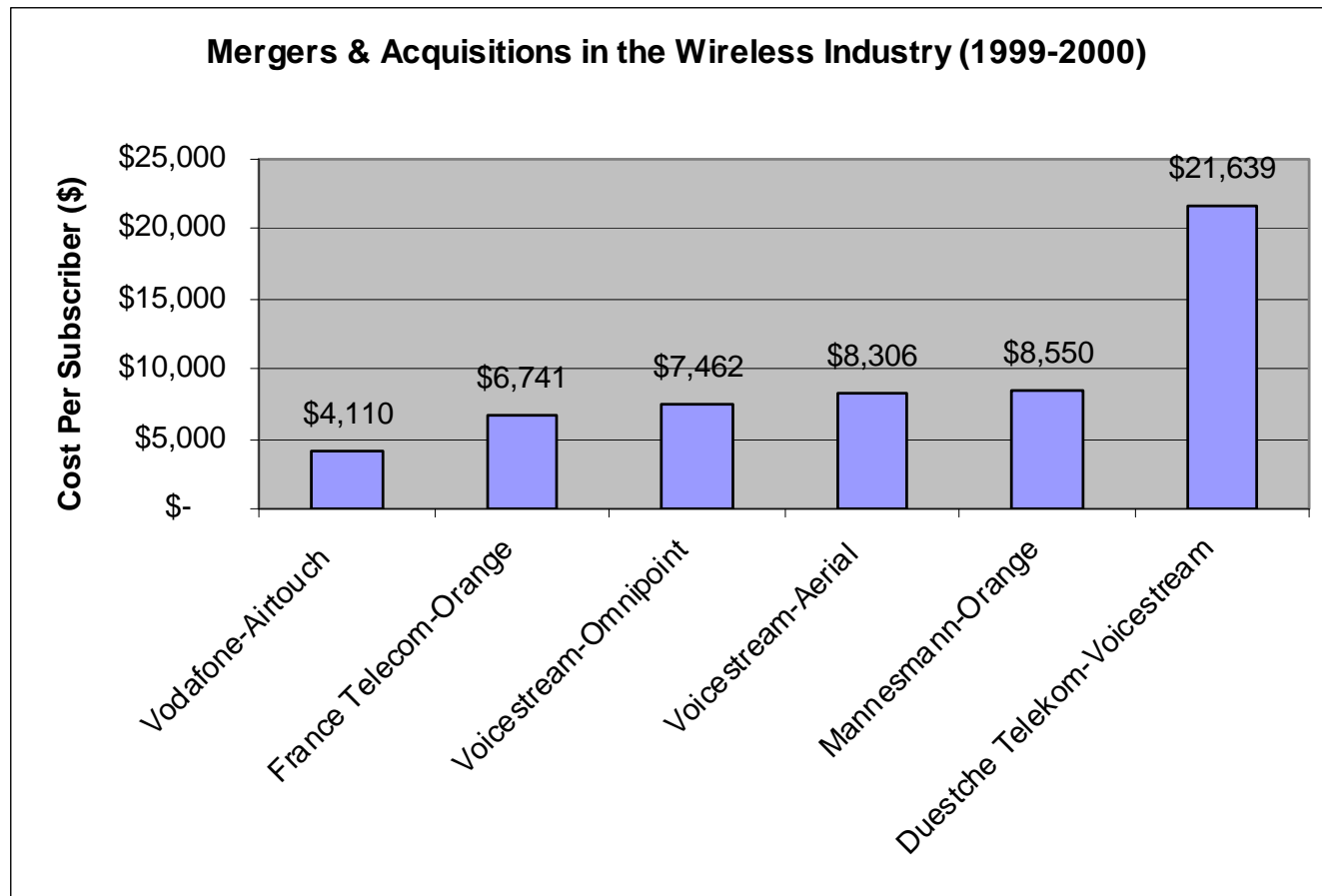MITSloan MARKETING

All Customers are Important, but...

Cumulative Profits
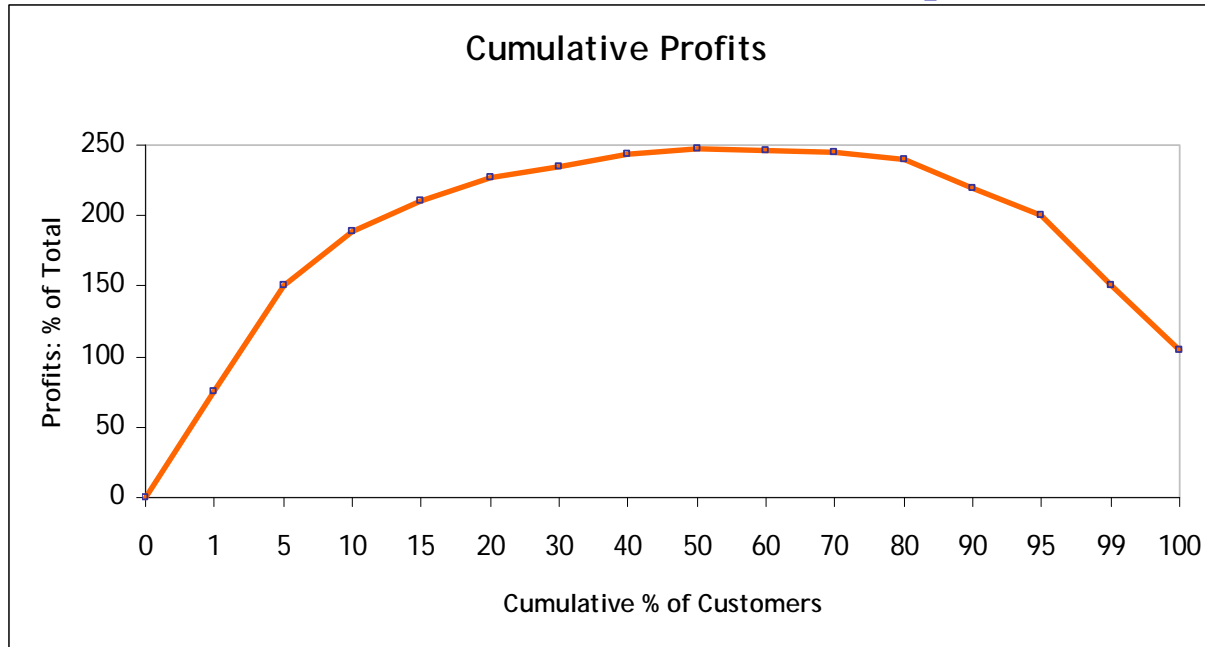
...some are More Important than Others
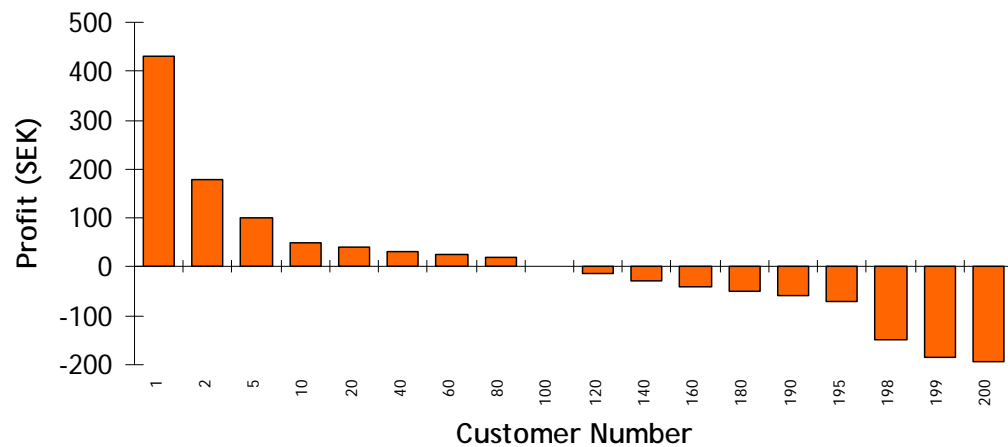
Source: Kanthal (A), HBS Case 9-190-002
Kanthal is a Swedish B2B selling hearing wires

Customer Profitability

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Mergers & Acquisitions in the Wireless Industry (1999-2000)

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Customer Retention
Profit Impact of 5% Increase in Customer Retention

Increase in Customer Net Present (y-axis)

Bar chart values:
- Advertising Agency: 95
- Auto/Home Insurance: 84
- Auto Service: 81
- Branch Bank Deposit: 85
- Credit Card: 75
- Industrial Brokerage: 50
- Industrial Distribution: 45
- Industrial Laundry: 45
- Life Insurance: 90
- Office Building Managemen: 40
- Publishing: 85
- Software: 35

Industry (x-axis)

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Customer Retention
(why think long term?)
Impact on Profit

- Profit from price premium
- Profit from referrals
- Profit from reduced cost
- Profit from increased purchases
- Base profit
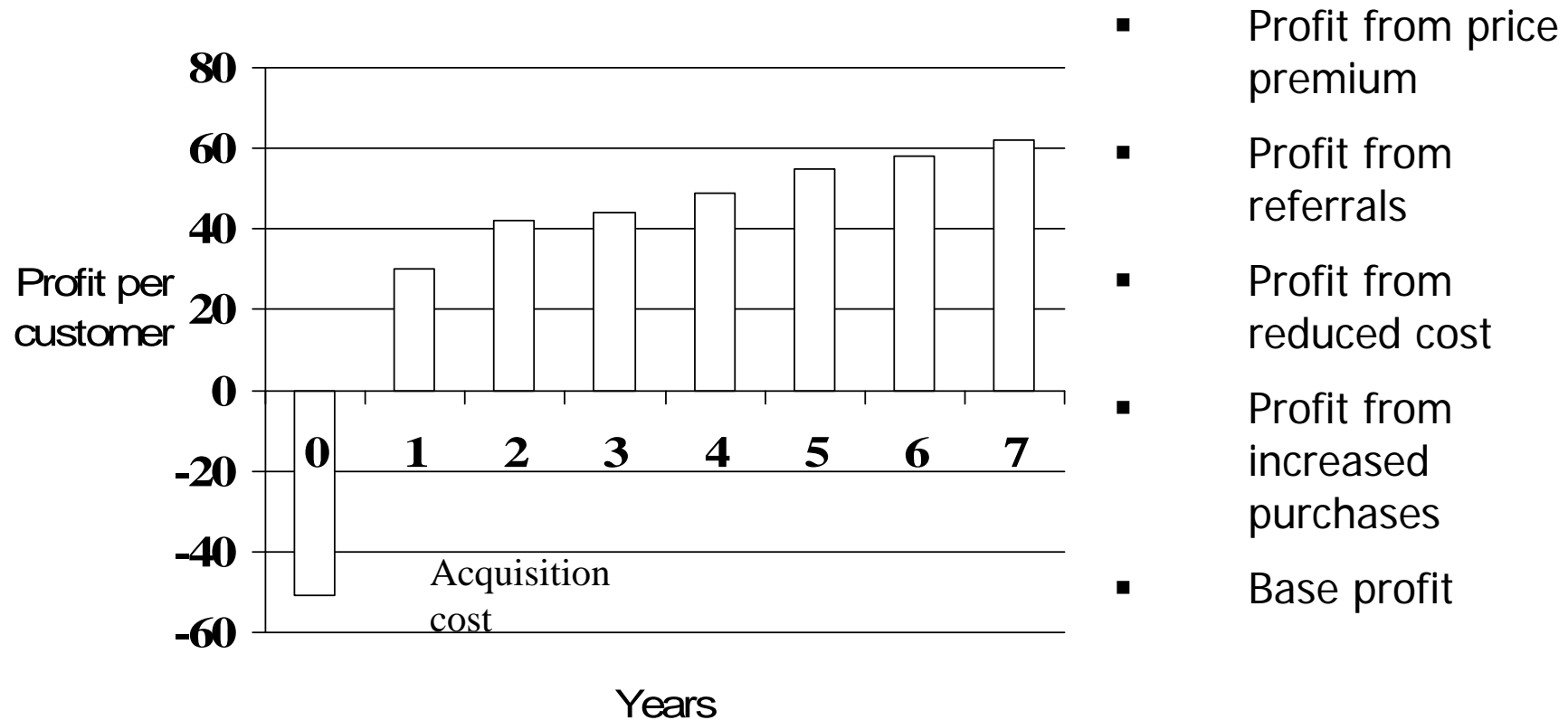
Source: Reichheld and Sasser (1990), "Zero Defections: Quality Comes to Service," *HBR*, Sep-Oct.

Under-investing in Retention

PRIMARY MARKETING GOALS[1] OF U.S. B-TO-B MARKETERS

	2004	2005
Customer acquisition	28.4%	28.4
Driving sales	31.8	26.8
Brand awareness	15.6	17.5
Lead generation	14.2	16.4
Customer retention	7.1	7.7

[1] As a percentage of respondents of more than 300 marketing executives
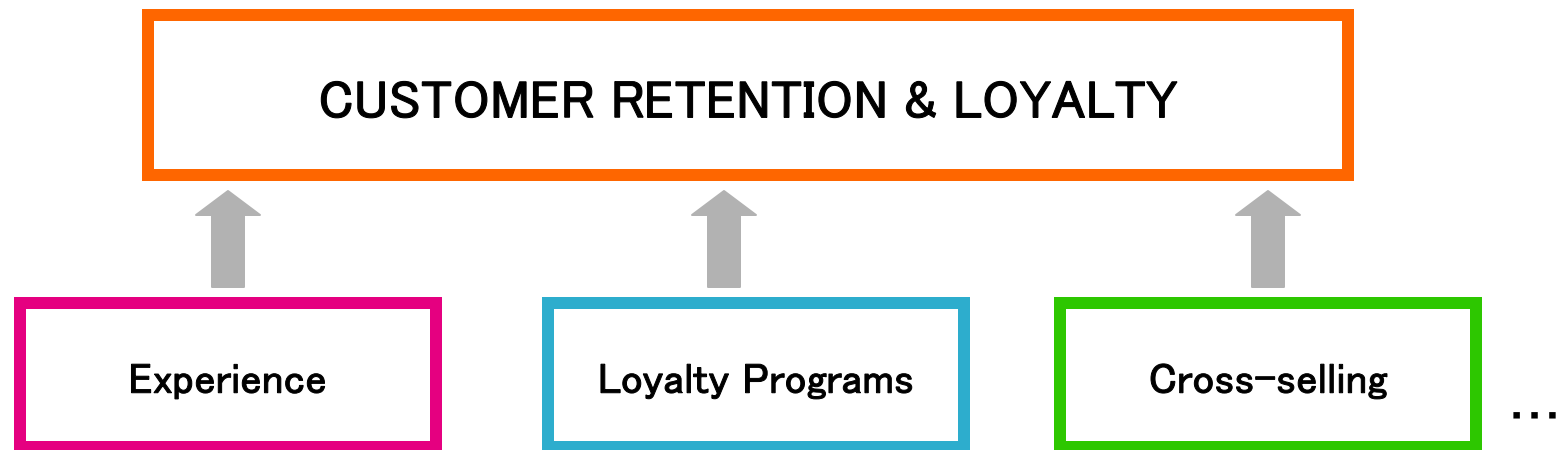
Source: *BtoB* Magazine, Chicago and eMarketer Inc., New York

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What Drives Retention and Loyalty?

CUSTOMER RETENTION & LOYALTY

Experience

Loyalty Programs

Cross-selling

...

Whiskey Blue Destination Bars
Whatever/Whenever Service

"Business travelers with a sense
of style can't get enough of the
W Hotel chain"

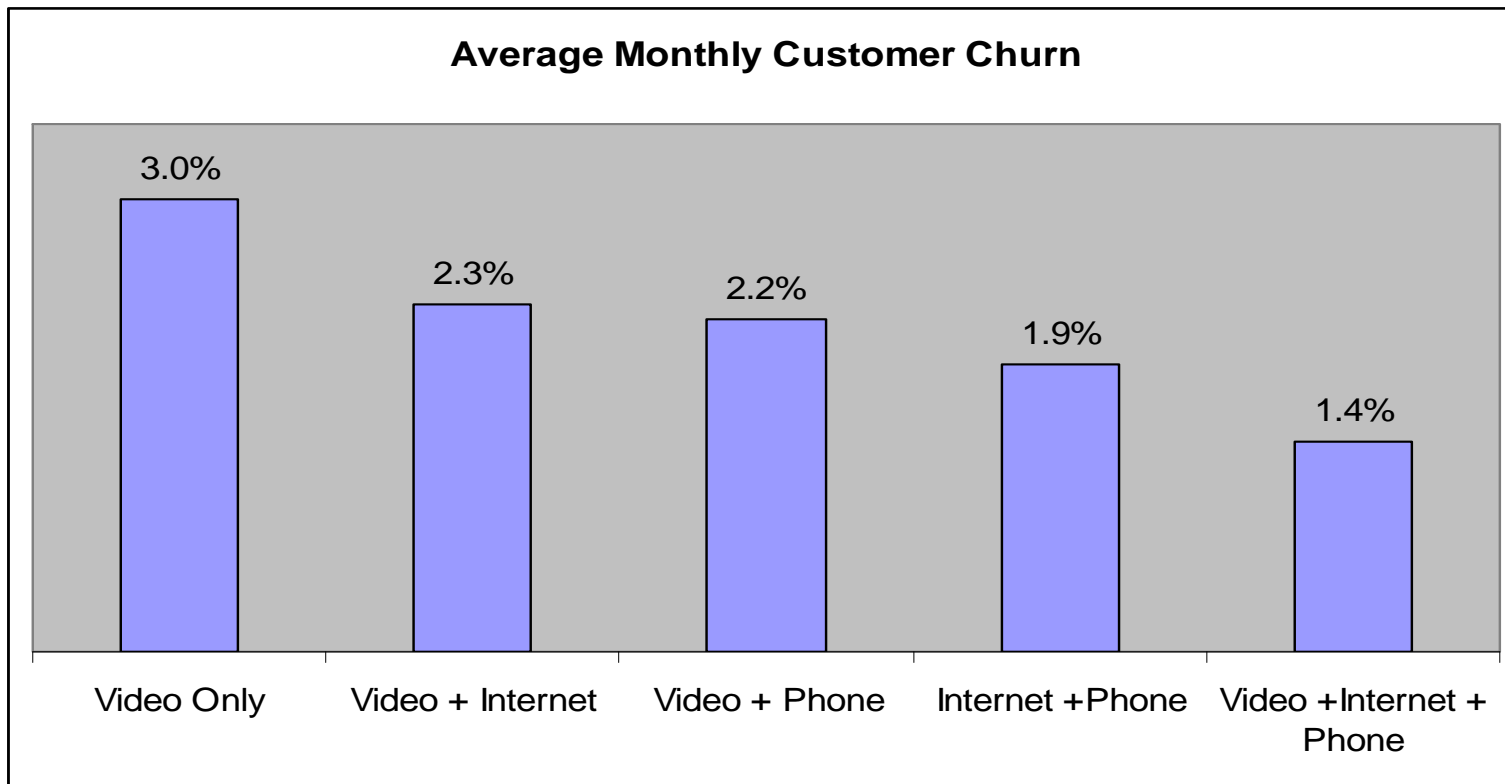– Entrepreneur Magazine

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III. Customer Expansion: Strategies to Increase Margin

- Pricing

- Share of Wallet

- Redefining your business

- Cross-Selling

Impact of Cross-Selling at Cox

Average Monthly Customer Churn

- Video Only — 3.0%
- Video + Internet — 2.3%
- Video + Phone — 2.2%
- Internet +Phone — 1.9%
- Video +Internet + Phone — 1.4%

Source : www.cox.com

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Easier Said Than Done

AOL's Vision or Pipe Dream?

$159 ◀ Monthly Revenue

$15	Games & entertainment
$20	Voice services
$20	Mobile services
$20	Music
$30	Family plan (multiple devices on one subscription)
$30	Broadband access
$24	AOL subscription

Average revenue per user

Monthly Revenue ▶ $24.37 (includes advertising)

Now   **Projected**

Source: Fortune, Feb 4, 2002

What Drives Firm Value?
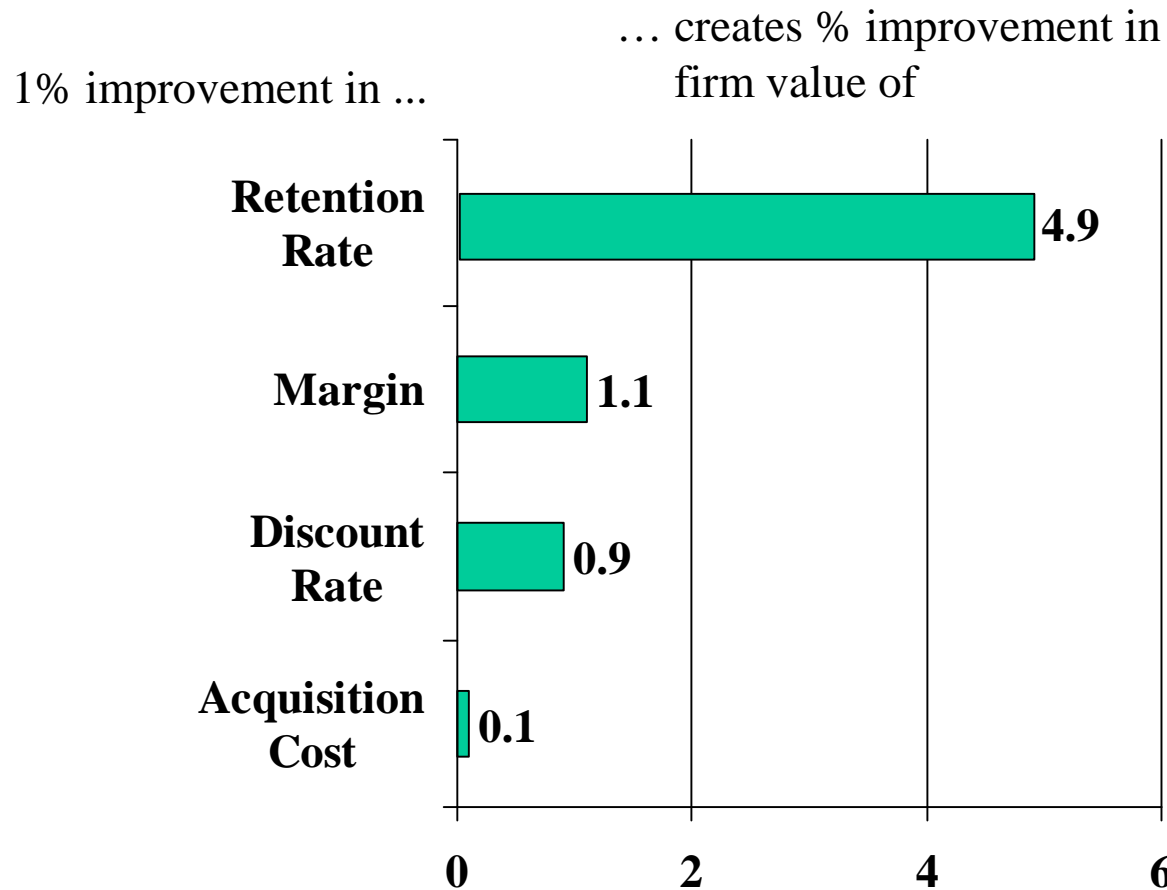
1% improvement in ...

… creates % improvement in firm value of

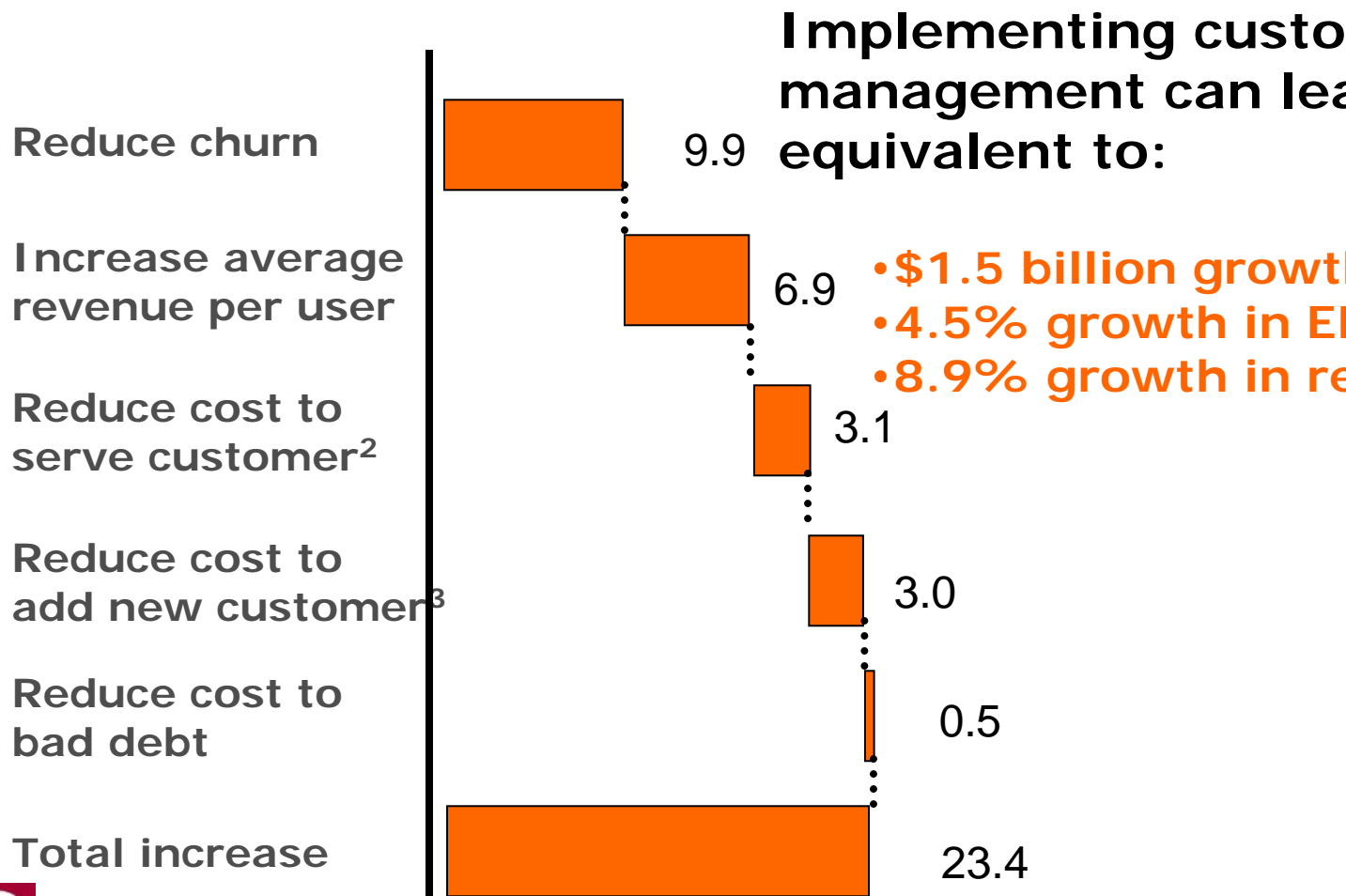| 1% improvement in ...	… creates % improvement in firm value of
Retention Rate	4.9
Margin	1.1
Discount Rate	0.9
Acquisition Cost	0.1

Gupta, Sunil, Donald R. Lehmann, and Jennifer Stuart (2004), "Valuing Customers," *Journal of Marketing Research*, February, 7-18.

Huge Earnings Potential

Expected increase in earnings before interest, taxes, depreciation, and amortization (EBITDA) for typical US wireless carrier, percent

Implementing customer lifetime management can lead to increase equivalent to:

- **$1.5 billion growth**
- **4.5% growth in El...**
- **8.9% growth in re...**

Reduce churn — 9.9

Increase average revenue per user — 6.9

Reduce cost to serve customer[2] — 3.1

Reduce cost to add new customer[3] — 3.0

Reduce cost to bad debt — 0.5

Total increase — 23.4

PRIMARY MARKETING GOALS[1] OF U.S. B-TO-B MARKETERS

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[1] As a percentage of respondents of more than 300 marketing executives

Source: *BtoB* Magazine, Chicago and eMarketer Inc., New York

Source: The McKinsey Quarterly, 2003, Number 4.

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Conclusion

- Customers are assets
- Lifetime value of a customer can be approximated as

$$LV = m\left(\frac{r}{1+i-r}\right) - AC$$

- Three key levers of growth
  - customer acquisition (AC)
  - customer retention (r)
  - customer expansion (m)

- **"Success is getting the right customers … and keeping them."**

Charles Cawley, Founder MBNA

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Appendix:
Modeling Customer Value

Time 0	n_0				
1	$n_0 r$	n_1			
2	$n_0 r^2$	$n_1 r$	n_2		
3	$n_0 r^3$	$n_1 r^2$	$n_2 r$	n_3	
4	$n_0 r^4$	$n_1 r^3$	$n_2 r^2$	$n_3 r$	n_4

$$n_0 \sum_{t=0}^{\infty} \frac{m_t r^t}{(1+i)^t} - n_0 c_0$$

$$n_1 \sum_{t=1}^{\infty} \frac{m_{t-1} r^{t-1}}{(1+i)^{t-1}} - n_1 c_1$$

$$\frac{n_1}{(1+i)} \sum_{t=1}^{\infty} \frac{m_{t-1} r^{t-1}}{(1+i)^{t-1}} - \frac{n_1 c_1}{(1+i)}$$

Value of Customer Base

- In discrete time

$$Value = \sum_{k=0}^{\infty} \frac{n_k}{(1+i)^k} \sum_{t=k}^{\infty} \frac{m_{t-k} r^{t-k}}{(1+i)^{t-k}} - \sum_{k=0}^{\infty} \frac{n_k c_k}{(1+i)^k}$$

- In continuous time

$$Value = \int_{k=0}^{\infty} \int_{t=k}^{\infty} n_k m_{t-k} e^{-ik} e^{-\left(\frac{1+i-r}{r}\right)(t-k)} dt\, dk \quad - \int_{k=0}^{\infty} n_k c_k e^{-ik} dk$$

Gupta, Sunil, Donald R. Lehmann, and Jennifer Stuart (2004), "Valuing Customers," *Journal of Marketing Research*, February, 7-18.

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If you **enjoyed** Behavioral Econ Lecture last week

this mktg elective is for <u>YOU</u>:

Consumer Behavior

15.847

Professor Joshua Ackerman

Time is running out!

Act NOW!

How do we know what to buy? What information captures our attention? When are we most susceptible to being persuaded? What shapes our decisions?

This class will help you develop a basic understanding of cognition and decision making as they apply to marketing contexts, and become familiar with the major research methods for analyzing consumer behavior

Topics include:

Influence techniques, Self-control, Behavioral decision theory, Nonconscious processing, Cognitive biases, Social consumption

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If you **enjoyed** LTV Lecture today
this mktg elective is for <u>YOU</u>:

15.840: Customer Analytics Using Probability Models

- Professor Michael Braun.
- Most of what drives customer behavior is unobservable
  - Still, there are regular patterns in activity that managers can exploit, even when we know nothing about specific customers
  - "Probability" lets us incorporate what we know, and **don't know**, about these patterns, in a rigorous, systematic way
- Goal of this class: **mastery** of cutting-edge quantitative methods that enable you to analyze customer data correctly
  - Structured thinking, not wild, assumptions
  - Decision-making under uncertainty: doing it well
  - Build models from the ground up (going "under the hood"), so you understand exactly what's going on.
- Full disclosure: it's hard-core quant.
  - Designed to be accessible to any Sloan MBA who did well in DMD.
  - Still, it's not for everyone. See Prof. Braun if you have questions.

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15.840: Customer Analytics Using Probability Models

- Selection of topics covered
    - Modeling customer lifetimes and customer retention
    - Estimating customer lifetime value
    - Forecasting adoption of new products
    - Modeling repeat purchases
    - Measuring and forecasting media exposures
    - The "80/20" rule: what is it really?
    - Using test marketing data to segment and target customers
    - What was the effect of 9-11 on the online travel industry?
    - "Buy Until Dead" models: will your previous customers ever return?
    - Understanding and exploiting metrics of brand effectiveness (and why most of them are useless)

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http://ocw.mit.edu

15.810 Marketing Management
Fall 2010

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