

Introduction to Marketing Analytics

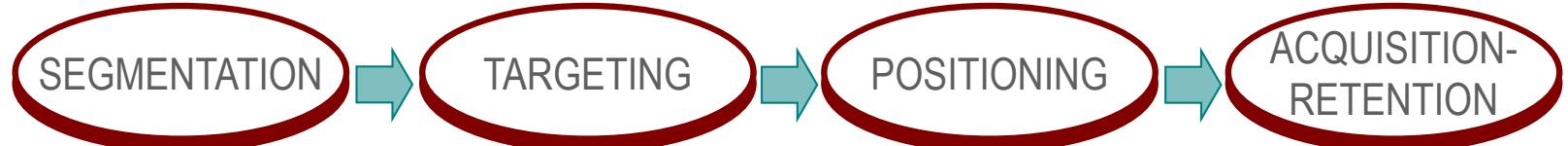
Session 2: Understanding Customer Value and How Customers Think

Professor Ricardo Montoya

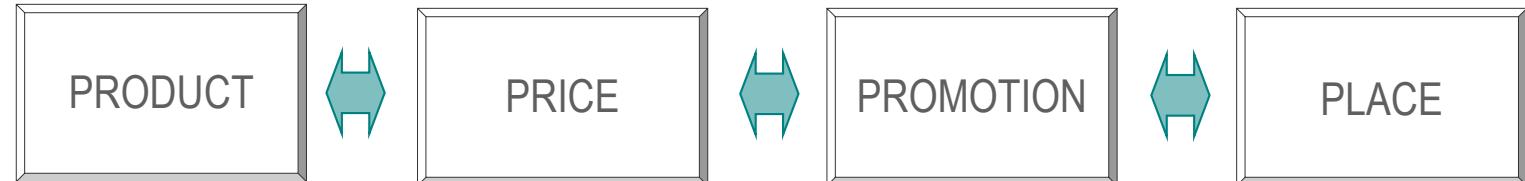
Identify Market Opportunities



Set Strategy



Formulate Marketing Program

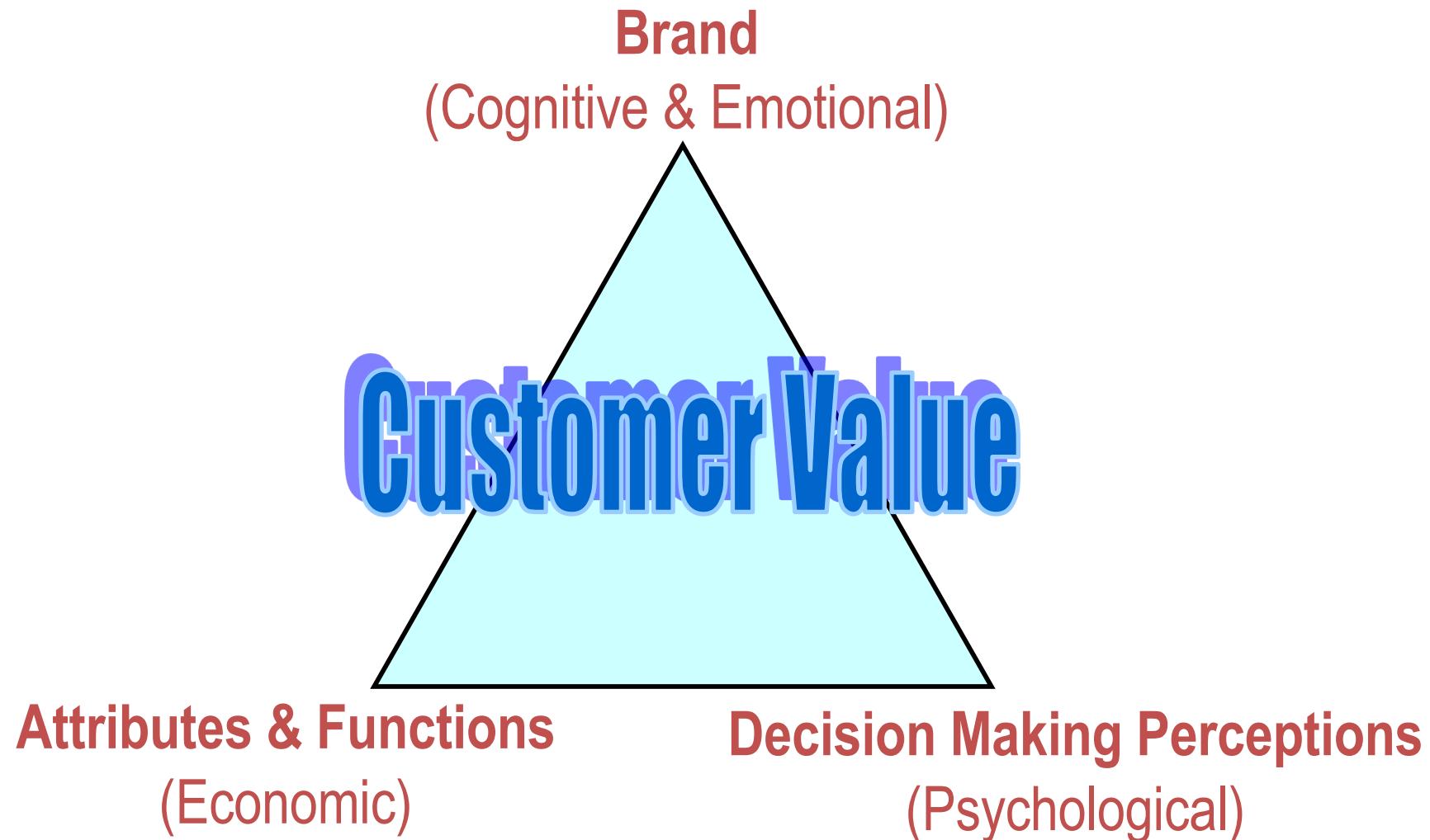


Understanding Customers

- Who buys what, when, and where?
- What attributes are important to them?
- How do they get information?
- **How do they make decisions?**
- **How do we provide value to them?**



Sources of Customer Value

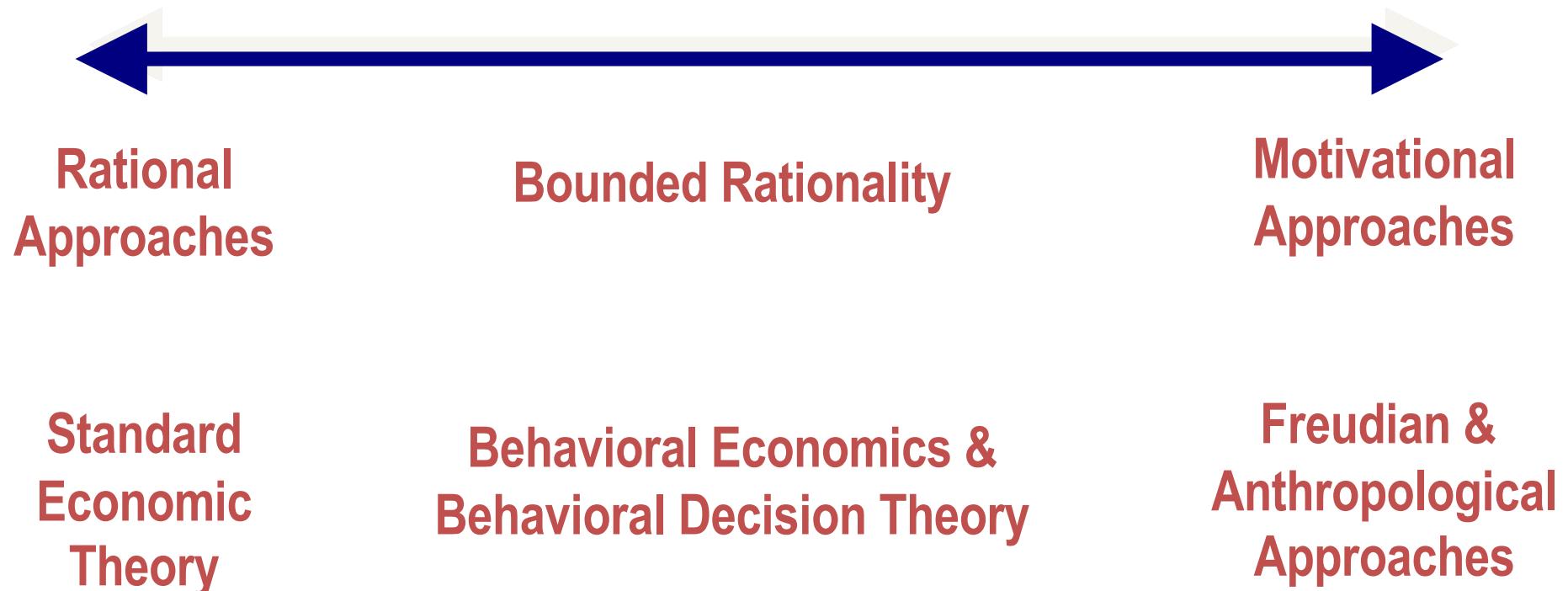


Agenda

- How do customers think?
 - Overview of approaches
 - Economic value to customers (EVC)
 - Decision making perceptions and behavioral economics

How Consumers Think

- A continuum of views:

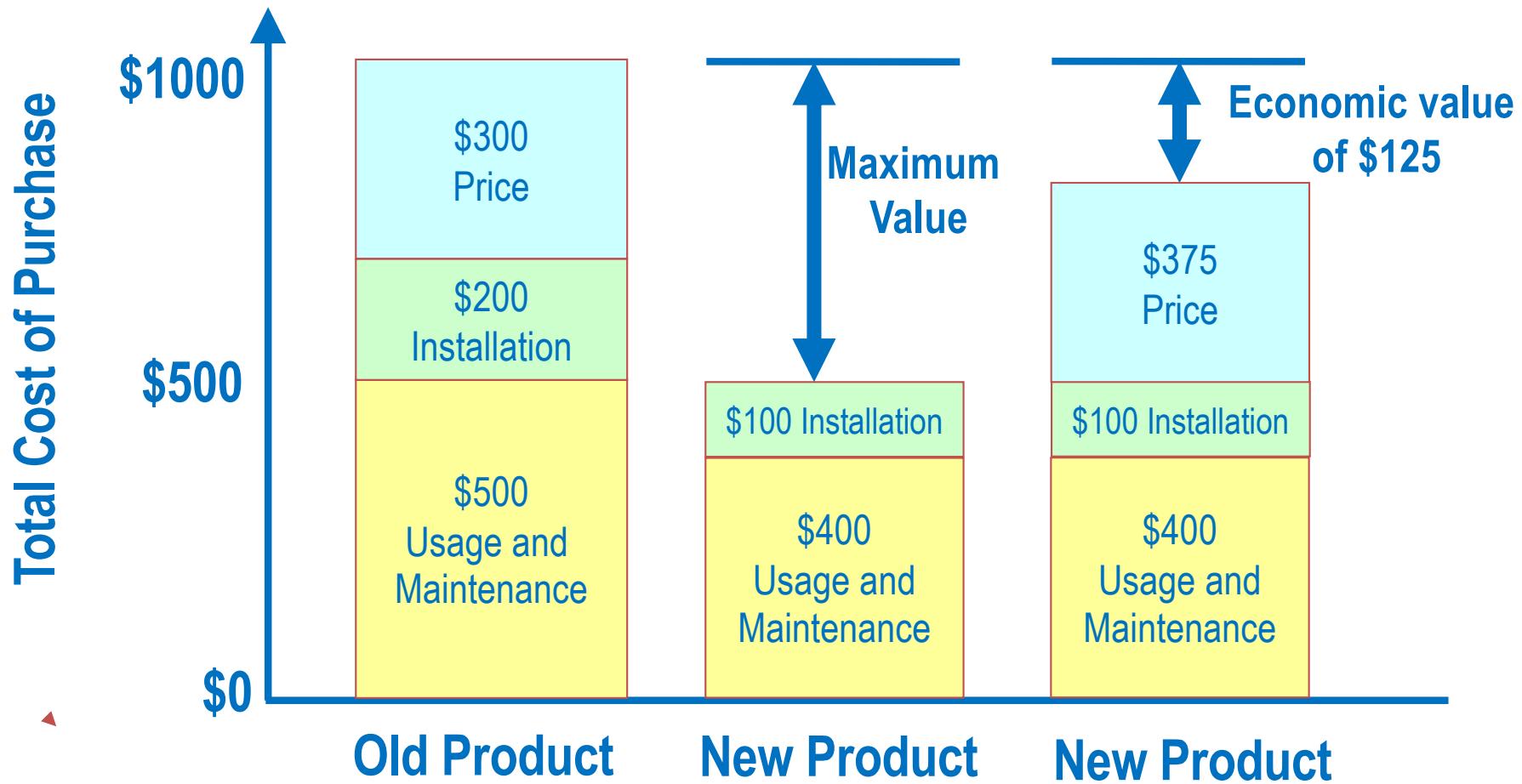


Economic Value to the Customer (EVC)

Economic Value to Customers

- Concept: The total (life-cycle) cost savings from using a new product in place of a current product
- Definition: $(\text{Total ownership cost of existing product}) - (\text{Total ownership cost of new product})$
- Usage: Helps determine the maximum value a customer would pay for a product

Example: New Telecom Switch



Source: "Market-Based Management:
Strategies for Growing Customer Value
and Profitability" by Roger J. Best.

Example

- Total cost of ownership
- 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 ▼
Canon i250 Color BubbleJet	103	387	6¢	\$49.99
Canon i350 Color BubbleJet	111	382	6¢	\$59.99
Epson Stylus C84	671	1,410	3¢	\$100.00
HP Business Inkjet 1100d	1,326	3,378	2¢	\$199.99
HP Deskjet 5150	381	310	8¢	\$99.99
HP Deskjet 5650	456	456	6¢	\$149.99
HP Deskjet 6127	673	902	4¢	\$249.99
Lexmark Z605 Color Jetprinter	173	694	12¢	\$50.00
Lexmark Z705 Photo Jetprinter	288	1,127	8¢	\$80.00

RED denotes Editors' Choice.

EVC - Exercise

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 **2 years** regardless of the mileage.

Assuming current oils need to be changed every **6,000 miles** at a cost of **\$30 per change** (oil at a dollar a quart or a total of **\$5**, labor **\$20**, disposal of oil **\$5**) for an average car.

1. What is the EVC of the new oil to a car driver who drives 15,000 miles per year? Note that an oil change includes five quarts of oil, and that the new synthetic oil will cost \$2/quart.
2. What is the maximum willingness to pay for the new oil \$/quart?



EVC Analysis

- Suggests a range of price
 - maximum price a customer is willing to pay
- Helps quantify benefits to customers
- Appropriate when customers are motivated to realize value in use
- Harder with consumer products, image goods

Issues in Using EVC

- Customer differences
 - E.g., high vs. low mileage drivers
- Convincing customers
- Other (fuzzy) benefits ignored
- BUT, EVC can be useful in
 - Pricing
 - Segmentation
 - New product introduction

Psychological Value Motivations & Behavioral Economics

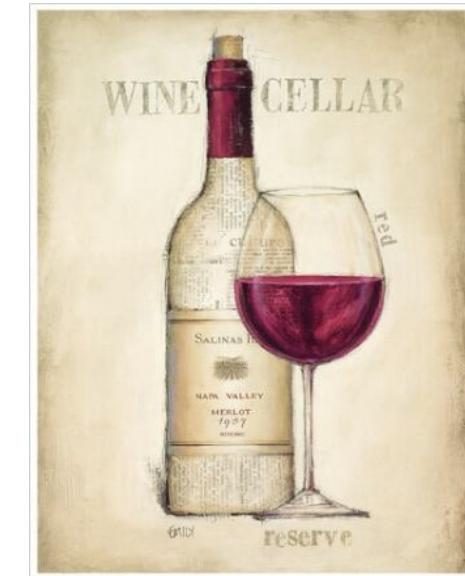
Behavioral Approach

- People are less than rational, driven by unconscious and uncontrolled motivations
- Best studied by observation and experiments
- Bounded Rationality
 - People, because of limited processing capacity, use simplified ways to make decisions.
 - Satisficing vs. Optimizing
- These simple rules or heuristics cause systematic biases
- Does this apply to you?

An “Alcoholic” Field Experiment

- Customers bought more German wine with German background music, and more French wine with French background music

<i>Bottles sold (2 weeks)</i>	<i>French music</i>	<i>German music</i>
French wine	40	12
German wine	8	22



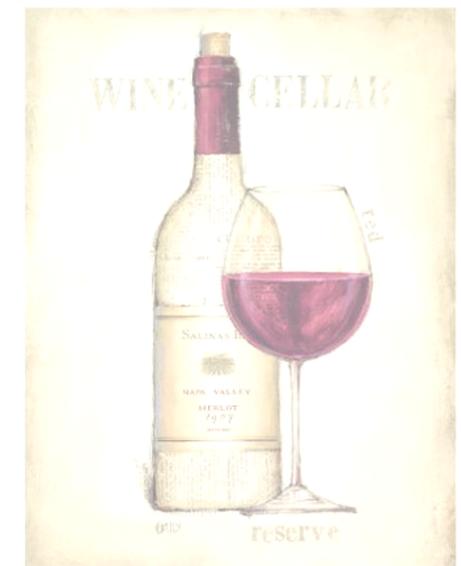
Source: North, Hargreaves, & McKendrick (1999), "The Influence of In-Store Music on Wine Selections," *Journal of Applied Psychology*, 84, 271-276.

Anchoring and Adjustment

- What are the last 3 digits of your SSN? (say *abc*)
- Would you be willing to pay more or less than \$*abc* for this bottle of wine? (Yes/No)
- How much are you willing to pay for this bottle of wine?

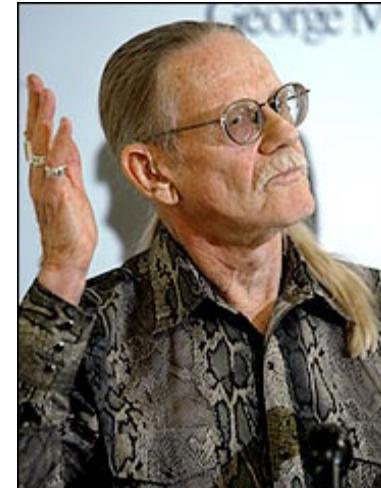
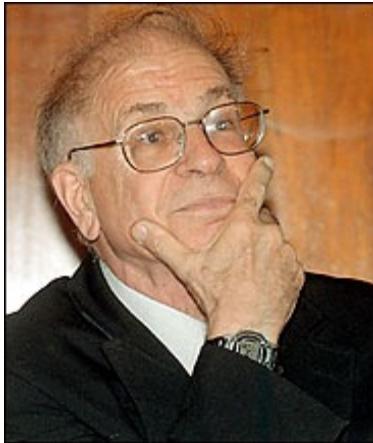
SSN: ... 000—199 → \$11.73

SSN: ... 800—999 → \$37.55 !!



Source: Ariely, Loewenstein, & Prelec (2003). "Coherent Arbitrariness: Stable Demand Curves Without Stable Preferences," *Quarterly Journal of Economics*, 118, 73-105.

Nobel Laureates...



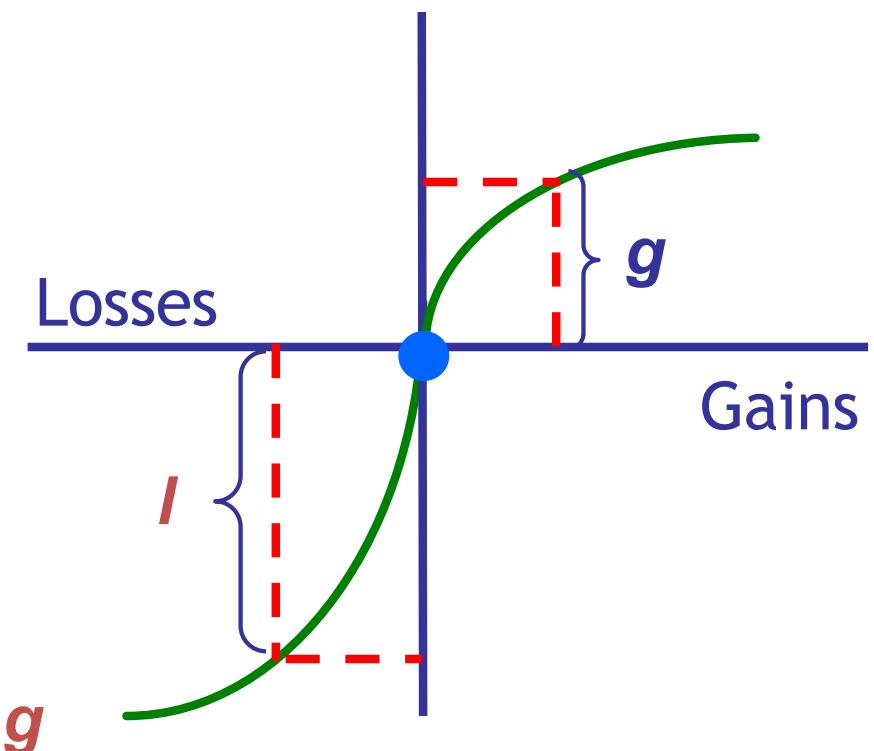
BUSINESS/FINANCIAL DESK | October 10, 2002, Thursday
A Nobel That Bridges Economics and Psychology

By DANIEL ALTMAN (New York Times)

ABSTRACT - Daniel Kahneman of Princeton University and **Vernon L Smith** of George Mason University are awarded *Nobel Memorial Prize in Economic Science*; tried to explain idiosyncrasies in people's ways of making decisions, research that has helped incorporate insights from psychology into discipline of economics.

Behavioral Approach: Prospect Theory

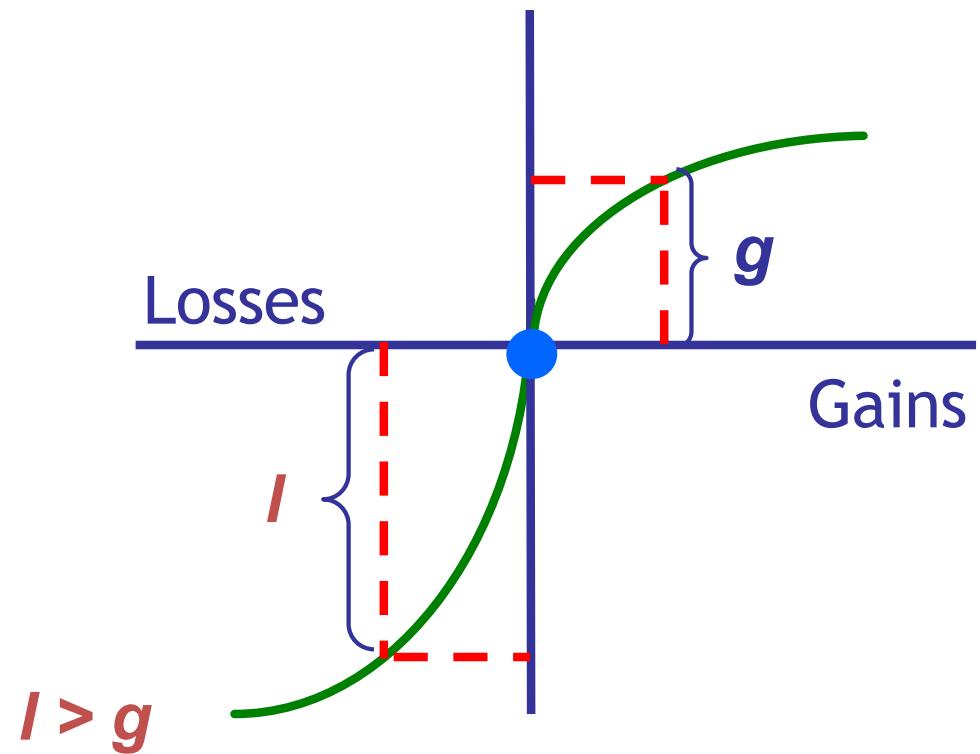
- Kahneman & Tversky (1979)
- Value is judged relative to a **reference point**
- Diminishing sensitivity
- Losses loom larger than gains (estimates range 2.0 – 2.5)
→ **loss aversion**



Concepts from Prospect Theory

- Mental accounting
- Reference pricing
- Framing
- Loss aversion

Do these apply to you?



Same Alternatives, Different Framing...

- A large car manufacturer has recently been hit with a number of economic difficulties and it appears as if three plants need to be closed and **6,000** employees laid off. The vice president of production has been exploring alternative ways to avoid this crisis. She has

Answers

Gain Frame – A: 64% B: 36%

Loss Frame – C: 38% D: 62%

Gain Frame:

- **Plan A:** This plan will save one of the three plants and 2,000 jobs.
- **Plan B:** This plan has one-third probability of saving all the three plants and all 6,000 jobs but has a two-thirds probability of saving no plants and no jobs.

Loss Frame:

- **Plan C:** This plan will result in the loss of two of the three plants and 4,000 jobs
- **Plan D:** This plan has two-thirds probability of resulting in the loss of all of the three plants and all the 6000 jobs, but has one-third probability of losing no plants and no jobs.

Status Quo Bias

- Loss aversion → tendency to favor **stability** over **change** (which may be associated with incurring a loss)
- Defaults are status quo
 - Adding options versus removing options (e.g. Dell)
 - Pension plans
 - Privacy policies
- Explanation for customer loyalty?
 - Best predictor of future purchase = past purchase

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21.5-inch iMac



NEW

21.5-inch: 1.4GHz

1.4GHz dual-core Intel Core i5
Turbo Boost up to 2.7GHz
8GB memory
500GB hard drive¹
Intel HD Graphics 5000

\$1,099.00

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21.5-inch iMac



21.5-inch: 2.7GHz

2.7GHz quad-core Intel Core i5
Turbo Boost up to 3.2GHz
8GB (two 4GB) memory
1TB hard drive¹
Intel Iris Pro Graphics

\$1,299.00

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21.5-inch iMac



21.5-inch: 2.9GHz

2.9GHz quad-core Intel Core i5
Turbo Boost up to 3.6GHz
8GB (two 4GB) memory
1TB hard drive¹
NVIDIA GeForce GT 750M with
1GB video memory

\$1,499.00

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Hardware



RAM

Memory

More memory (RAM) increases performance and enables your computer to perform faster and better. Choose additional 1600MHz DDR3 memory for your iMac.

[Learn more ▾](#)

- 8GB 1600MHz DDR3 SDRAM - 2X4GB
- 16GB 1600MHz DDR3 SDRAM - 2X8GB [Add \$200.00]



Storage

Configure your iMac with a large Serial ATA hard drive. Or choose flash storage for greater performance. Or get the best of both worlds and select Fusion Drive.

[Learn more ▾](#)

- 1TB Serial ATA Drive @ 5400 rpm
- 1TB Fusion Drive [Add \$200.00]
- 256GB Flash Storage [Add \$200.00]
- 512GB Flash Storage [Add \$500.00]



Apple USB SuperDrive

Compact and convenient, the external Apple USB SuperDrive connects to your iMac with a single USB cable. It lets you install new software and play and burn both CDs and DVDs, including double-layer DVDs.

[Learn more ▾](#)

- None
- Apple USB SuperDrive [Add \$79.00]



Mouse and Magic Trackpad

The wireless Magic Mouse — the world's first Multi-Touch mouse — comes standard with your iMac. But if the look and feel of a Multi-Touch trackpad is more your thing, then choose to have Magic Trackpad shipped with your iMac instead, at no extra cost.

[Learn more ▾](#)

- Apple Magic Mouse
- Magic Trackpad
- Apple Magic Mouse + Magic Trackpad [Add \$69.00]
- Apple Mouse



Apple Keyboard and Documentation

The Apple Wireless Keyboard comes standard with your iMac. Its ultra-compact design saves space and lets you place your mouse comfortably next to your keyboard. Or you can choose the wired Apple Keyboard with Numeric Keypad. In addition, you can select the language of the keyboard and documentation.

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Summary

\$1,299.00

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Specifications

2.7GHz Quad-core Intel Core i5, Turbo Boost up to 3.2GHz

8GB 1600MHz DDR3 SDRAM - 2X4GB

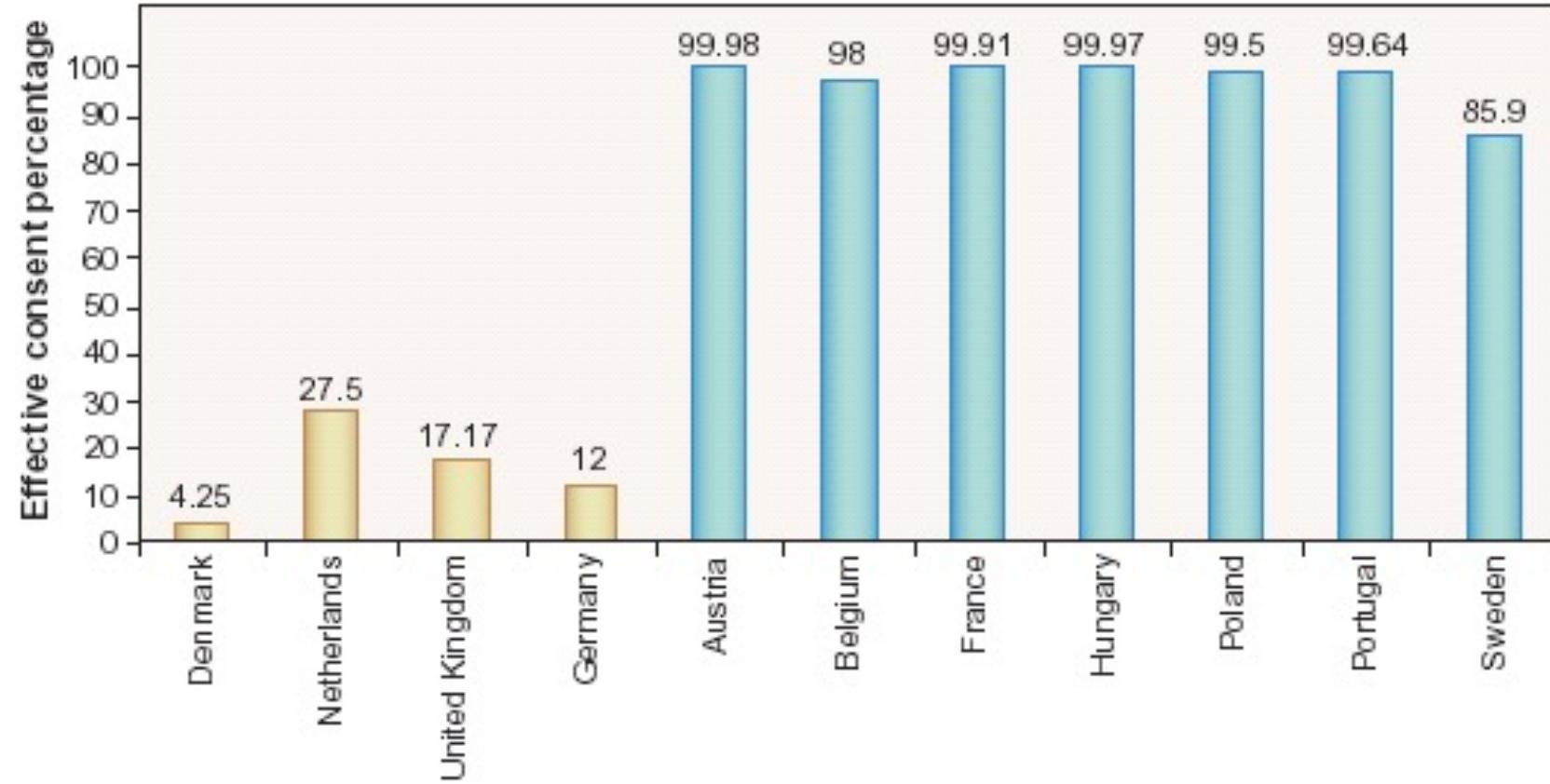
1TB Serial ATA Drive @ 5400 rpm

Intel Iris Pro Graphics

Apple Magic Mouse

Apple Wireless Keyboard
(English) & User's Guide
Accessory Kit

Status Quo & Organ Donation



Effective consent rates, by country. Explicit consent (opt-in, gold) and presumed consent (opt-out, blue).

Source: Johnson, E. J. & Goldstein, D. G. (2003), "Do defaults save lives?" *Science*, 302, 1338-1339.

Economists' View of Preferences

- Expected utility theory
 - Consumers have **stable** preferences
- Utility is revealed in choices
 - Weak axiom of revealed preferences: “if x is ever chosen when y is available, then there can be no budget set containing both alternatives for which y is chosen and x is not.” (Samuelson)

Psychologists' View of Preferences

- Preferences can be **constructed!**
 - x and y can be chosen in different contexts
 - We have preferences for only very basic things (e.g., chocolate!)
- Malleability of preferences is an opportunity for marketers!

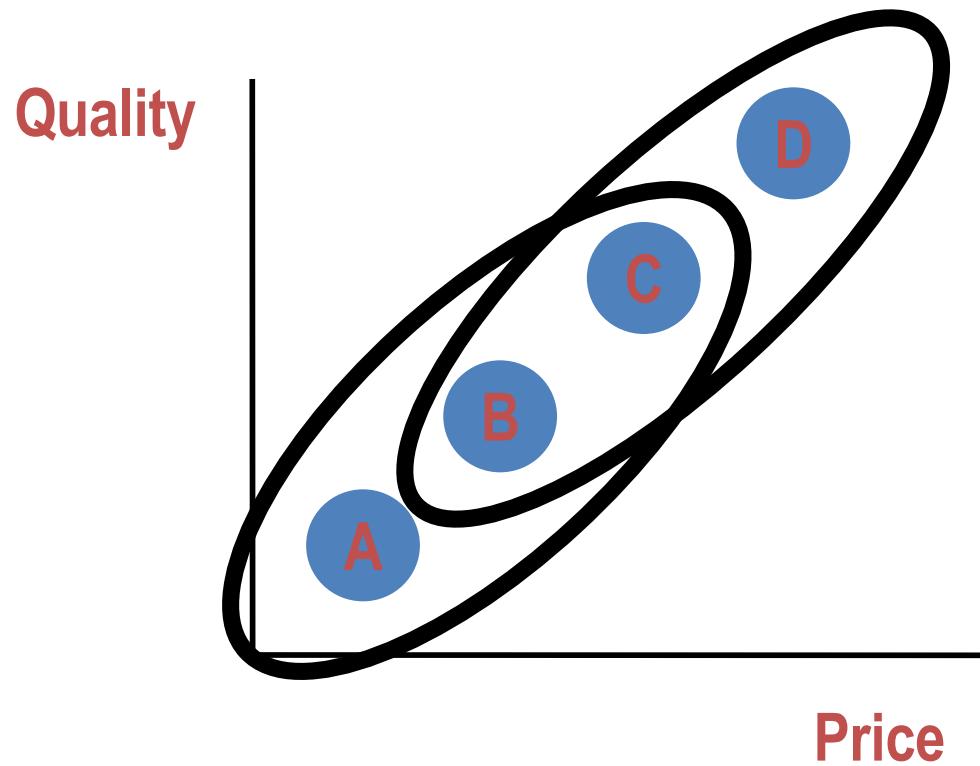
At the Movies...



Compromise Effect

The share of a product is **enhanced** when it is the **intermediate** option in the choice set and is diminished when it is an extreme option.
(Simonson 1989)

Compromise Effect



Compromise Effect



wine list

	glass	bottle
sparkling wines & champagne		
laurent - perrier, champagne, france 187ml	16	
bisol, "crede," prosecco di valdobbiadene, brut, italy	52	
pol roger, brut, cuvee reserve, n.v., 375, champagne, france	60	
billecart-salmon, brut, rosé n.v., 375, champagne, france	75	
billecart-salmon, brut, reserve n.v., champagne, france	100	
pol roger, brut, cuvee reserve, n.v., champagne, france	115	
billecart-salmon, brut, rosé n.v., champagne, france	140	
crisp, light & fruity whites		
sauvignon, muscadet, loire '05	7	26
della scala, pinot grigio, italy '05	8	30
babich, sauvignon blanc, new zealand '05	10	38
itsas merdi, hondarrabi zurí, bizkaiko txakolina, spain '04	48	
pazo senorans, albariño, rias baixas, spain '04	50	
selene, sauvignon blanc, hyde vineyard, carneros '05	64	
round, spicy & earthy whites		
paulinshof, riesling halbtrocken, germany '04	11	40
oriel, "ortolan," gruner veltliner, austria '04	12	46
oriel, rosé, "femme fatale," bordeaux france	48	
carlei, pinot gris, australia '04	13	50
le haut-lieu, chenin blanc, vouvray '375, demi-sec, france '02	50	
eberle, "mill road," viognier, paso robles '05	56	
lucien crochet, sancerre, france '04	60	
albert boxler, gewürztraminer, alsace '04	64	
rafael palacios, "as sortes," godollo, spain '04	68	
chardonnay		
il cuore, mendocino county '04	9	34
hook & ladder, "estate," russian river '03	12	46
vasse river, margaret river valley, australia '04	62	
verget, "terroirs de fleys," chablis '04	68	
destino, napa valley, '04	78	
marc collin, st. aubin "le charmois," 1er cru, france '03	90	
pinot noir		
rutz, "sonoma cuvee," sonoma '04	10	38
babcock, tri-counties, california '05	14	56
francois leclerc, bourgogne, france '04	60	
icardi, "nej," piedmont, italy '03	74	
lachini, "estate," willamette valley '04	88	
lange, freedom hill, willamette valley '04	125	
domaine de la vogüeraie, "la justice," gevrey-chambertin '02	150	
cabernet & bordeaux blends		
root: 1, cabernet sauvignon, chile '03	9	34
niel joubert, cabernet sauvignon, south africa '04	10	38
thomas halby, cabernet sauvignon, napa '03	11	42
château deyrem-valentin, '375 margaux, bordeaux	50	
javier assensio, cabernet sauvignon, navarra, spain '00	60	
lariat, cabernet sauvignon, napa '02	68	
château belfregard, figueac grand cru, bordeaux '01	75	
château sainte-anne, pauillac, bordeaux '03	80	
morgenthaler, lourens river valley, south africa '01	85	
long meadow ranch, cabernet sauvignon, napa '03	94	
ristow, quinta de pedras vineyard, cabernet sauvignon, napa valley '02	125	
goldschmidt vineyard, cabernet sauvignon, oakville '04	140	
unique red varietals		
stephen vincent, merlot, california '03	8	30
navarro correias, malbec, argentina '05	9	34
in pectore, barbera d'asti, superiore, italy '01	10	38
domaine deffends, clos de la truffière, provence '99	12	46
howell mountain, zinfandel, napa '03	14	54
allegrini, palazzo della torre, italy '01	56	
muga reserva, rioja, spain '02	58	
j.l. cheval, st. joseph, "offerus," northern rhone valley '03	64	
jc cellars, "fess parker's vineyard," syrah, santa barbara '04	72	
closa batllot, priorat, spain '03	88	
roda ll, rioja, spain '01	98	
bricco de neveis, barbaresco, riserva, piedmont, italy '07	110	
canalicchio di sopra, brunello di montalcino, riserva, italy '95	160	

Compromise Effect



Caffe Latte

- Tall (12 oz) – \$2.80
- Grande (16 oz) – \$3.40
- Venti (20 oz) – \$3.95

Which is the most popular size?

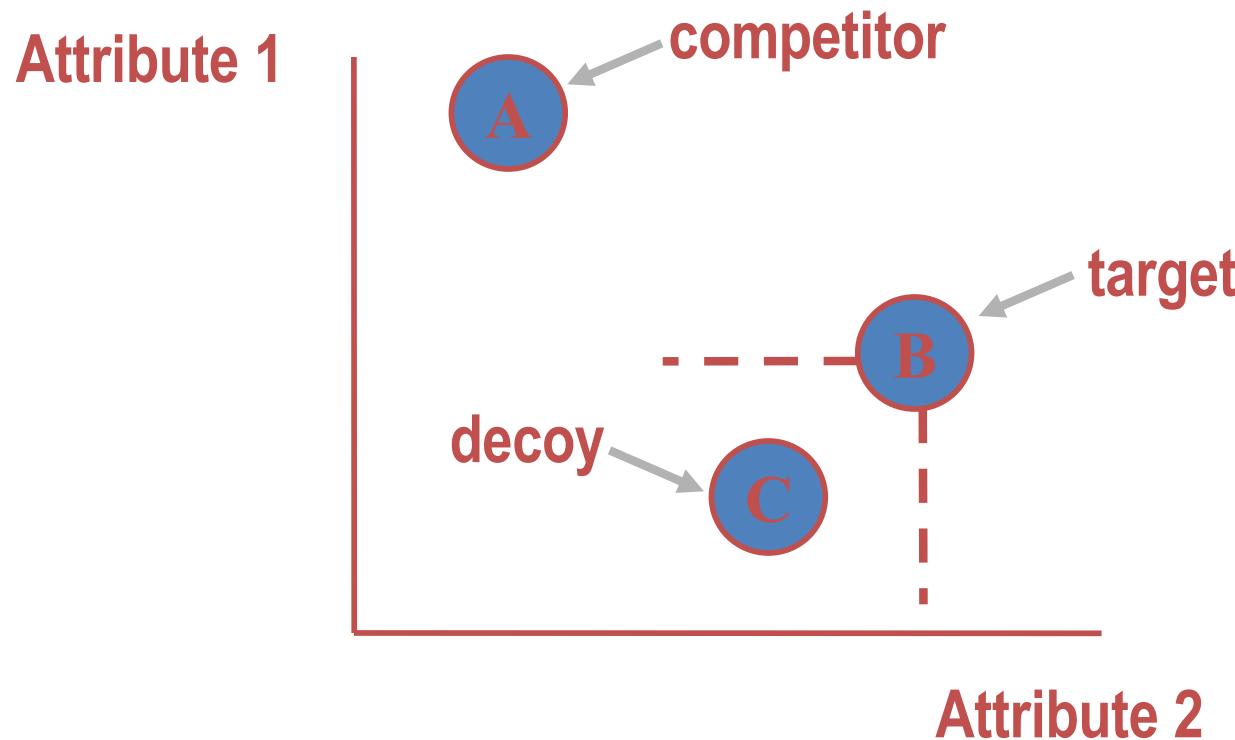
COFFEE, TEA & MORE

	TALL 12 FL OZ	GRANDE 16 FL OZ	VENTI 20 FL OZ
Brewed Coffee	1.70	1.95	2.30
Iced Coffee	---	1.95	2.30
Iced Coffee with Milk	---	2.40	2.75
Hot Chocolate	2.60	3.10	3.30
Chai Tea Latte	3.30	3.80	4.10
Iced Chai Tea Latte	---	3.65	3.95
Tazo Tea	---	---	1.45
Black, Green, or Passion Iced Tea	---	2.10	2.50
Black, Green, or Passion Iced Tea Lemonade	---	3.10	3.50

ESPRESSO

Cappuccino	2.80	3.40	3.95
Caffè Latte	2.80	3.40	3.95
Iced Caffè Latte	---	3.40	3.95
Vanilla Latte	3.60	4.30	4.60
Iced Vanilla Latte	---	4.00	4.40
Caffè Americano	2.00	2.50	3.00
Iced Caffè Americano	---	2.45	2.75
Caramel Macchiato	3.60	4.30	4.60
Iced Caramel Macchiato	---	4.30	4.60
Mocha	3.30	4.00	4.40
Iced Mocha	---	4.00	4.40
White Chocolate Mocha	3.30	4.00	4.40
Iced White Chocolate Mocha	---	4.30	4.60
Seasonal Beverage	3.60	4.30	4.60
Iced Seasonal Beverage	---	4.30	4.60

Asymmetric Dominance Effect



Asymmetric Dominance Effect

Adding a dominated alternative can increase the probability of choosing the dominating alternative. (Huber, Payne and Puto 1982)

Does Asymmetric Dominance Increase Category Purchase?

Circle which, if any, portable PC you would buy:



1.6GHz
\$1500



1.75GHz
\$1800



1.8GHz
\$1800

A

B'

B

I would not buy any of the above

Circle which, if any, portable PC you would buy:



1.6GHz
\$1500



1.8GHz
\$1800

A

B

I would not buy any of the above

45%

55%

85%

15%

→ This implies 8% increase in revenues.

Source: Netzer 2007

Does Asymmetric Dominance Increase Category Purchase?

Circle which, if any, portable PC you would buy:



1.6GHz
\$1500



1.75GHz
\$1800



1.8GHz
\$1800

A

B'

B

I would not buy any of the above

Circle which, if any, portable PC you would buy:



1.6GHz
\$1500



1.8GHz
\$1800

A

B

I would not buy any of the above

No Choice: 21%

No Choice: 32%

→ Asymmetric dominance increases purchase probability!

Both effects imply 25% increase in revenues.

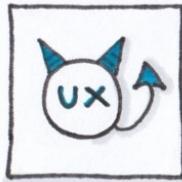
Source: Netzer 2007



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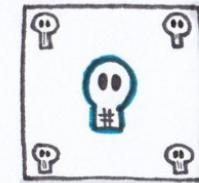
Why is this relevant for Customer Analytics?

- Data are generated through different means
- You need to understand how data were generated
- Bias into the model → bias out the model
- Models are approximated representations of behavior
- All models are wrong, some are useful
- Analytics is not about data or models is about using data and models to make better decisions



DARK PATTERNS

UX Knowledge Base Sketch #29



DARK PATTERNS ARE

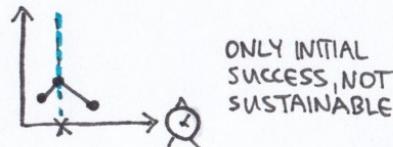


TRICKS
THAT MAKE THE USERS DO
THINGS THEY DID NOT MEANTO.

FINE LINE BETWEEN
INFLUENCING USERS'
BEHAVIOR AND
TRICKING THEM!

DARK PATTERNS CAN WORK
IF SOMEONE IS LOOKING FOR
SHORT-TERM RESULTS.

VS.
USING DARK PATTERNS
HAS A NEGATIVE IMPACT
IN THE LONG-TERM



ONLY INITIAL
SUCCESS, NOT
SUSTAINABLE



USERS WILL
SWITCH TO
MORE ETHICAL
PRODUCTS / SERVICES

— THE MOST COMMON TYPES —



FORCED CONTINUITY

FREE TRIAL → CHANGES
TO A PAYING SCHEME WITHOUT
WARNING



DELIBERATE MISDIRECTION

FOCUSING THE USERS' ATTENTION
ON THE MORE EXPENSIVE OPTION,
HIDING THE CHEAPER WAY



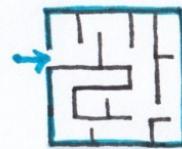
BAIT & SWITCH

USE A CONVENTION, PATTERN
IN A WAY TO MAKE THE USER
FALSELY ASSUME SOMETHING



HIDDEN COSTS

AT THE CHECKOUT, A NEW,
UNEXPECTED COST APPEARS



ROACH MOTEL
THE START IS EASY
(SIGN UP/SUBSCRIPTION),
QUITTING IS HARD



GROWTH HACKING THROUGH
SPAMMING

YOU BECOME THE SPAMMER
WITHOUT KNOWING IT



SNEAK INTO BASKET

A RANDOM ADDITIONAL ITEM
APPEARS IN YOUR BASKET
(WITHOUT YOUR CONSENT)



DISGUISED ADS

AN AD LOOKING LIKE
ANOTHER TYPE OF CONTENT
/ NAVIGATION



ROADBLOCK

A POP-UP INTERRUPTS YOUR
INTENDED ACTION



MISINFORMATION

E.G. CONFUSING
COLOR, CONTRAST
LANGUAGE

TRICK QUESTIONS
CHECK BOX
TREACHERY



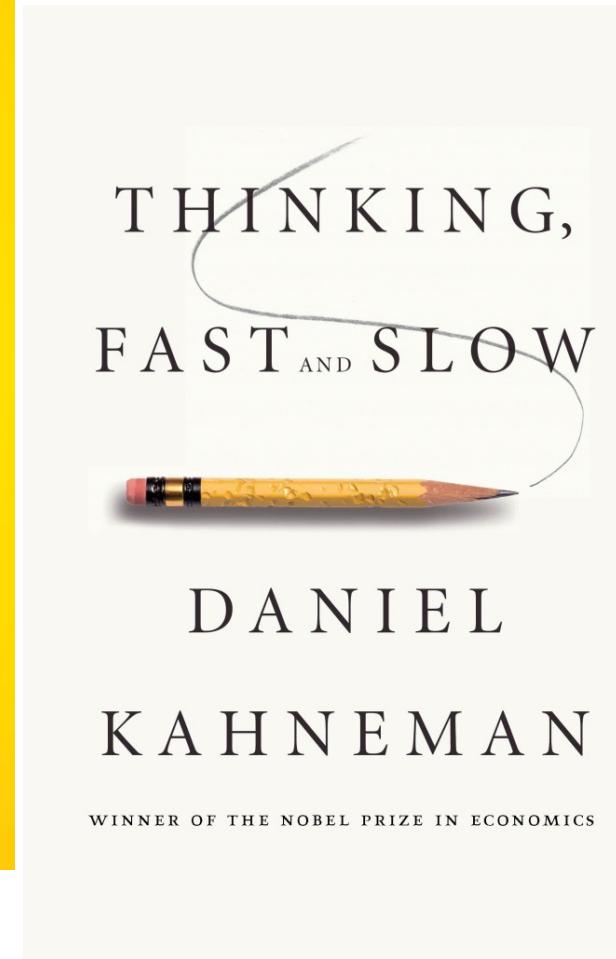
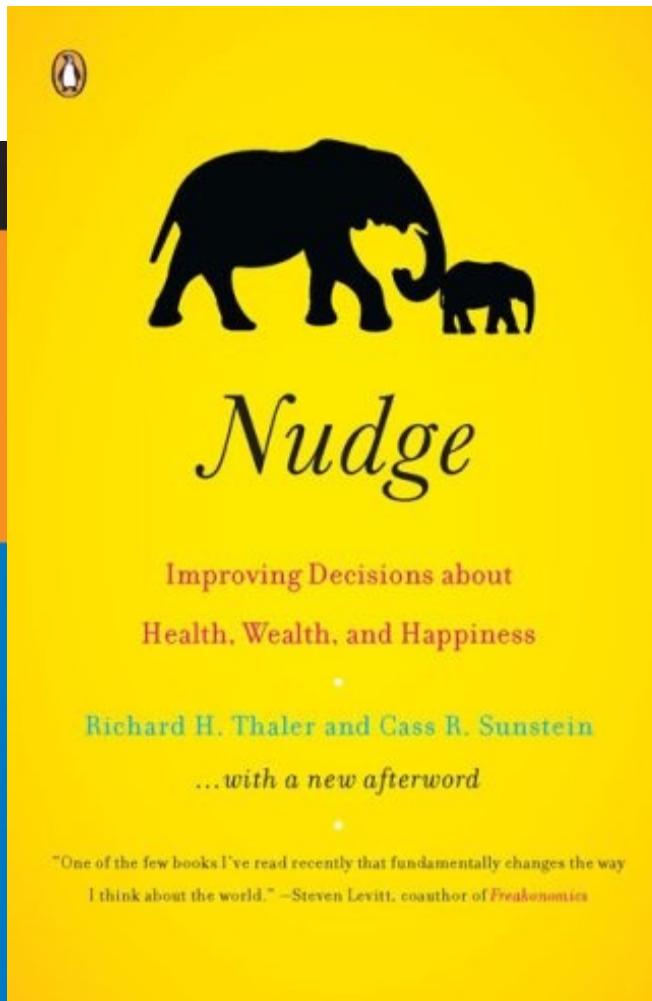
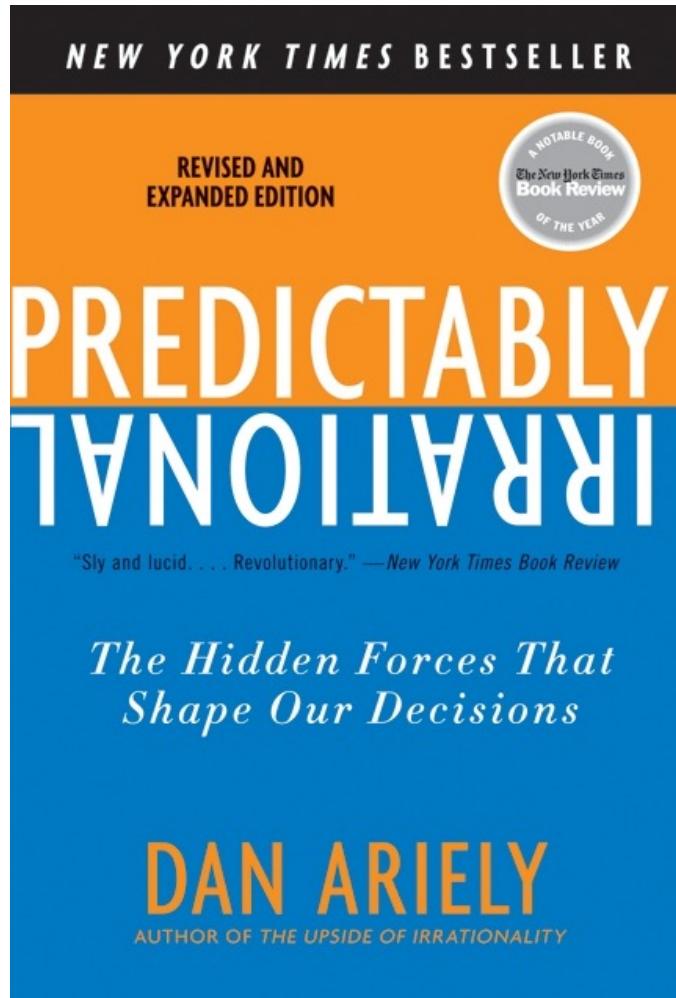
PRIVACY ZUCKERING

SHARING MORE PRIVATE INFO
THAN YOU WANT

Main Takeaways

- Functional/Economic Value
 - Economic Value to Customers (EVC)
- Psychological Value & Decision Making Perceptions
 - Customers think differently, but systematically (e.g., Prospect Theory, Mental Accounting)
 - Preferences can be constructed (e.g., Compromise Effect, Asymmetric Dominance Effect)
- Relevant for customer Analytics
 - From a predictive point of view
 - From a normative point of view

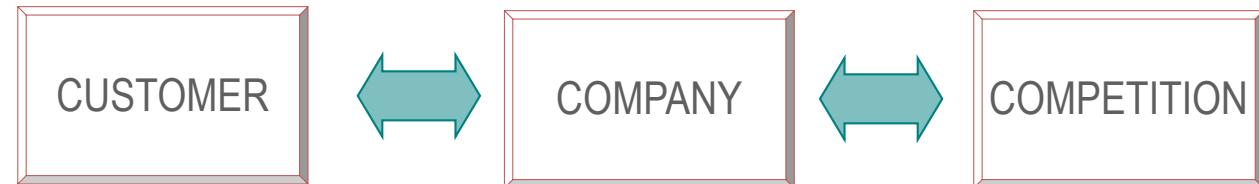
Further Reading



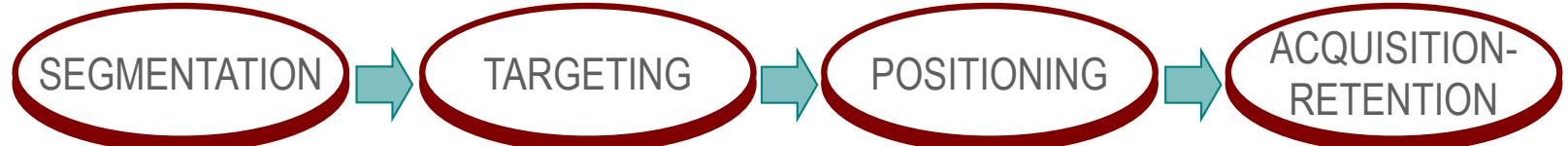
Session 2: Customer Lifetime Value (CLV)

Professor Ricardo Montoya

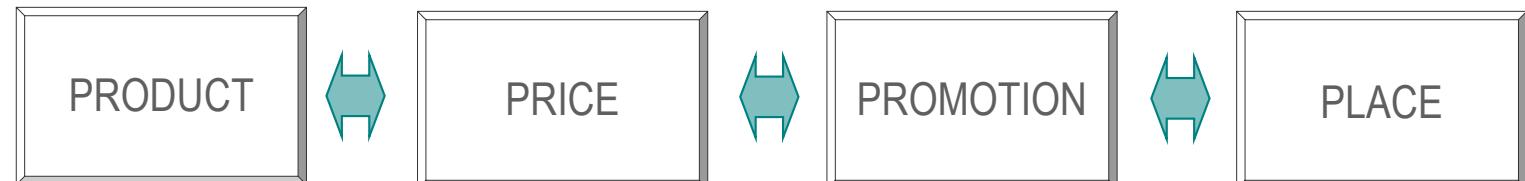
Identify Market Opportunities



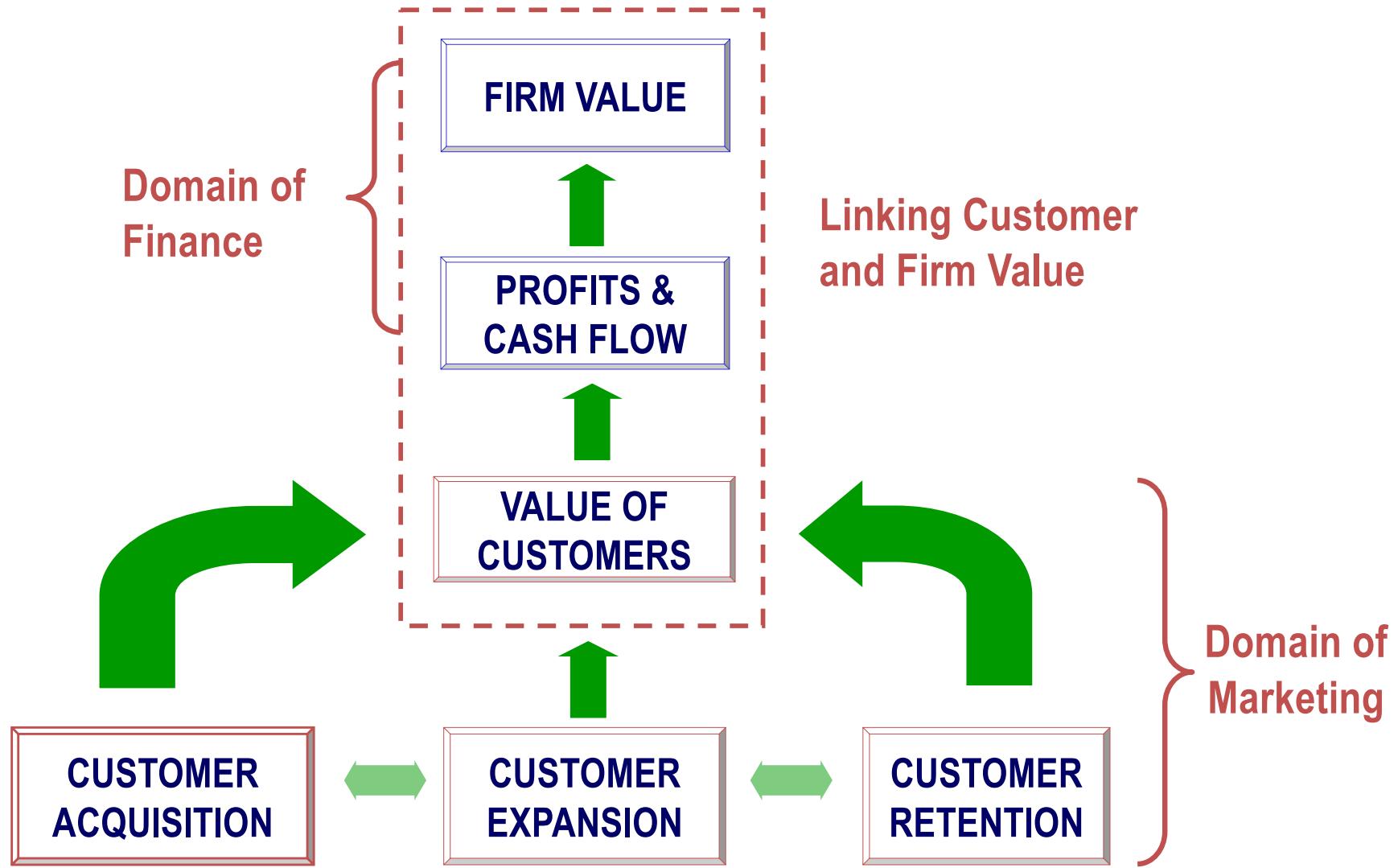
Set Strategy



Formulate Marketing Program



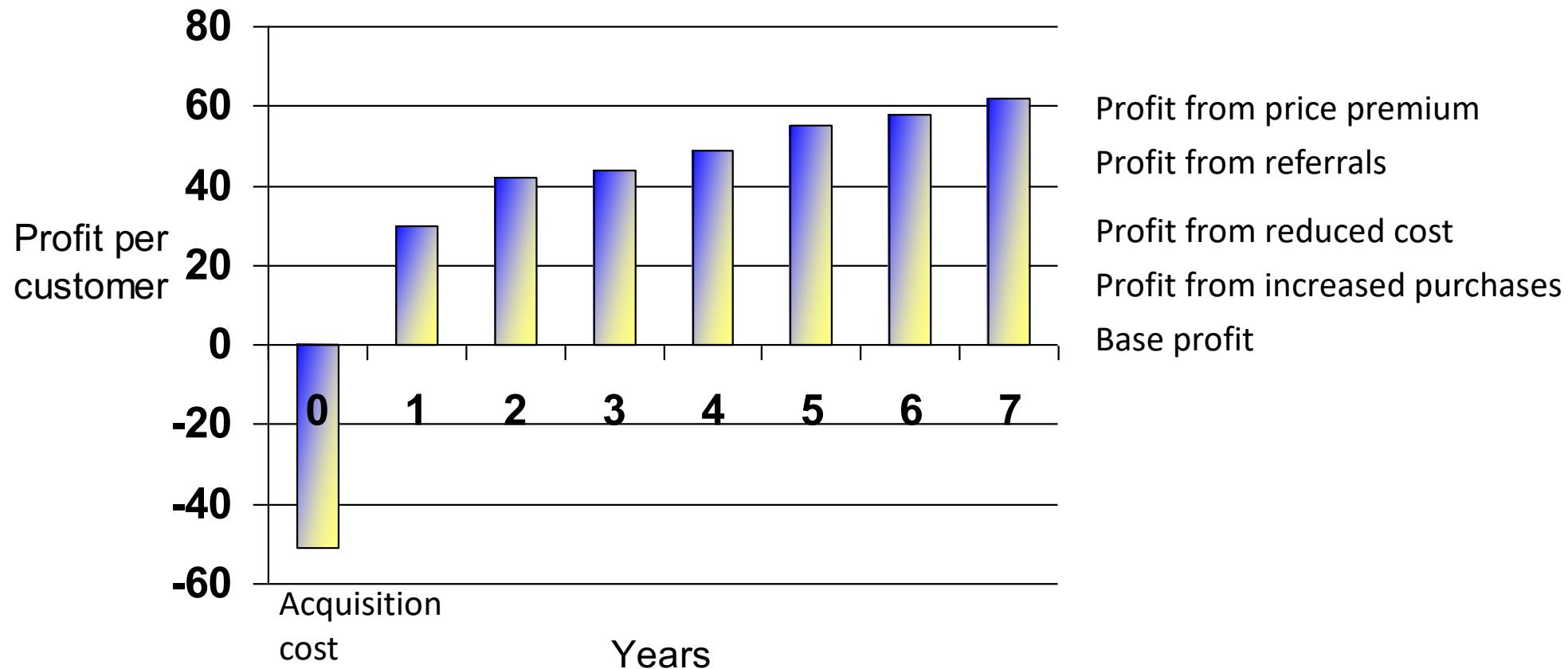
Customer and Firm Value



Customer Lifetime Value

- Why focus on lifetime value of customers?
 - Can improve the firm's understanding of customers needs
 - Can improve profitability
 - Can improve the firm's decisions (product design, service and support, economic constraints and/or flexibility/sensitivity)
 - Can decrease the uncertainty of repeated purchases

Customer Lifetime Value



Source: Reichheld and Sasser (1990), "Zero Defections: Quality Comes to Service," *HBR*, Sep-Oct.

What is CLV?

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

Lifetime Value of Customers: An Example

- You own a tennis club where the annual membership fee is \$300.
- The average club member spends \$100 a year at the club (tennis balls, drinks, snacks, etc...).
- The average contribution margin on these expenditures is 60%.
- On average, people who join a tennis club have a playing career of 5 years.
- Historically, 80% of the members each year rejoin in the following year.
- Based on this information what is the expected long-term profitability of a customer?

Lifetime Value of a Tennis Member

Year	Annual Profit	Expected	
		Retention	Profit
1	360	1.00	360.00
2	360	0.80	288.00
3	360	0.64	230.40
4	360	0.51	183.60
5	360	0.41	147.60
Expected CLV		\$1210.18	

Measuring Customer Value

- Lifetime value of a customer

$$LV = \left(\frac{m \times r}{1 + i} \right) + \left(\frac{m \times r^2}{(1 + i)^2} \right) + \dots - AC = m \left(\frac{r}{1 + i - r} \right) - AC$$

m = margin = profits

i = discount rate

r = retention rate

AC = acquisition cost

Customer Lifetime Value (CLV)

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

m = margin

i = discount rate

r = retention rate

AC = acquisition cost

margin
multiple



Netflix Example

- Netflix charges \$13.99 per month
- Variables costs are about \$1.50 per account per month
- Marketing (retention) spending of \$6 per year
- Churn rate of 0.5% per month
- Monthly discount rate of 1%
- What is the CLV?



Netflix's Plans and Pricing



[← Back to Help Home](#)

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Currently viewing information for: **UNITED STATES** ▾

Plans and Pricing

Netflix offers a variety of plans to meet your needs. The plan you choose will determine the number of devices that you can watch Netflix on **at the same time**.

With all of our plans, you can download the Netflix app on all your favorite devices and watch unlimited movies and TV shows.

	Basic	Standard	Premium
Monthly cost* (United States Dollar)	\$8.99	\$13.99	\$17.99
Number of screens you can watch on at the same time	1	2	4
Number of phones or tablets you can have downloads on	1	2	4
Unlimited movies and TV shows	✓	✓	✓
Watch on your laptop, TV, phone and tablet	✓	✓	✓
HD available		✓	✓
Ultra HD available			✓

Suggested Articles

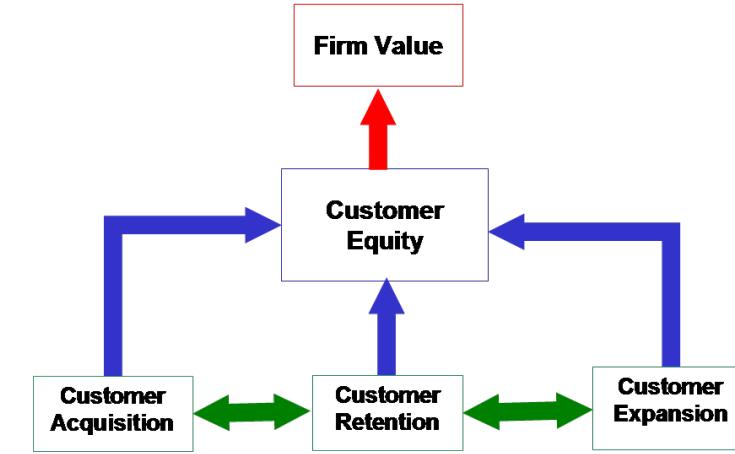
- How to change your plan
- What is Netflix?
- Billing and Payments
- How to pay for Netflix
- How do I cancel Netflix?

Increasing Value of Customers

Three strategies:

- Customer acquisition (gain new customers)
- Customer expansion
- Customer retention

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

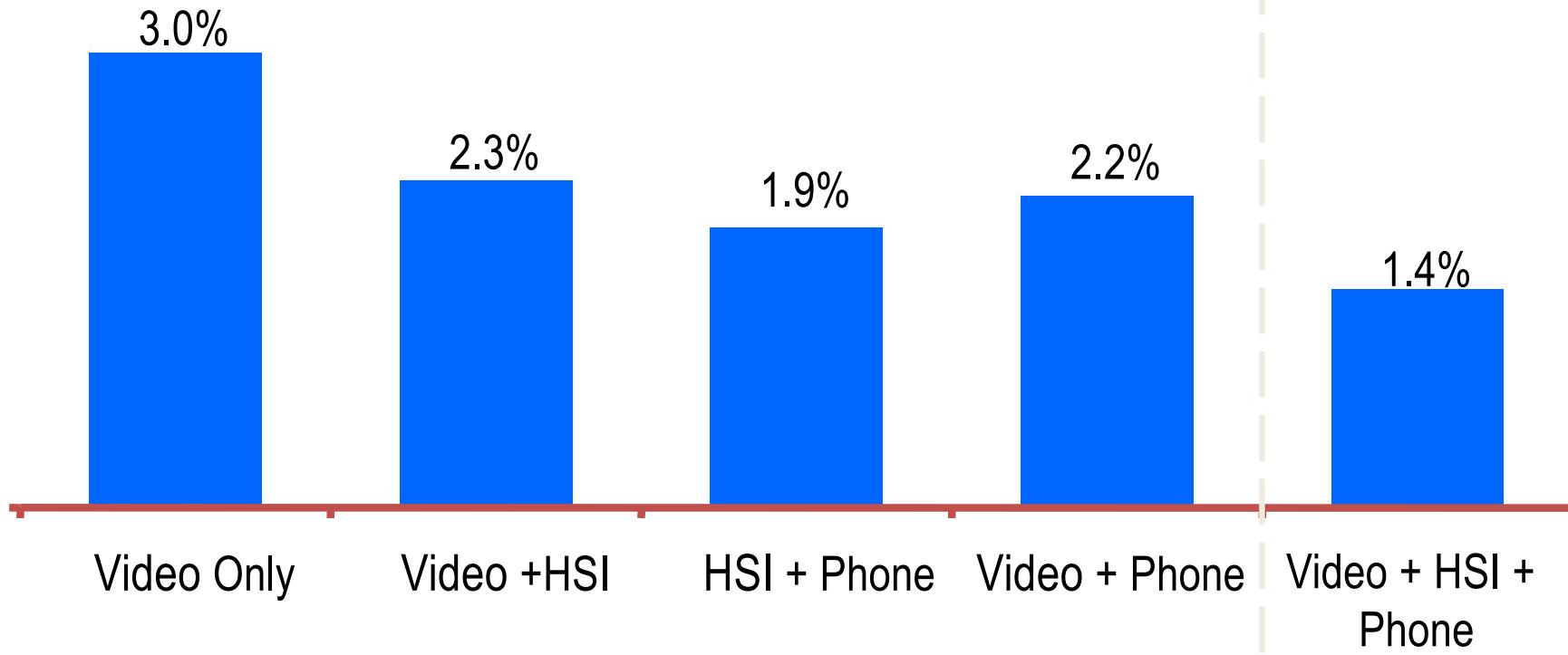


Customer Acquisition Costs By Industry



Impact of Bundling on Churn

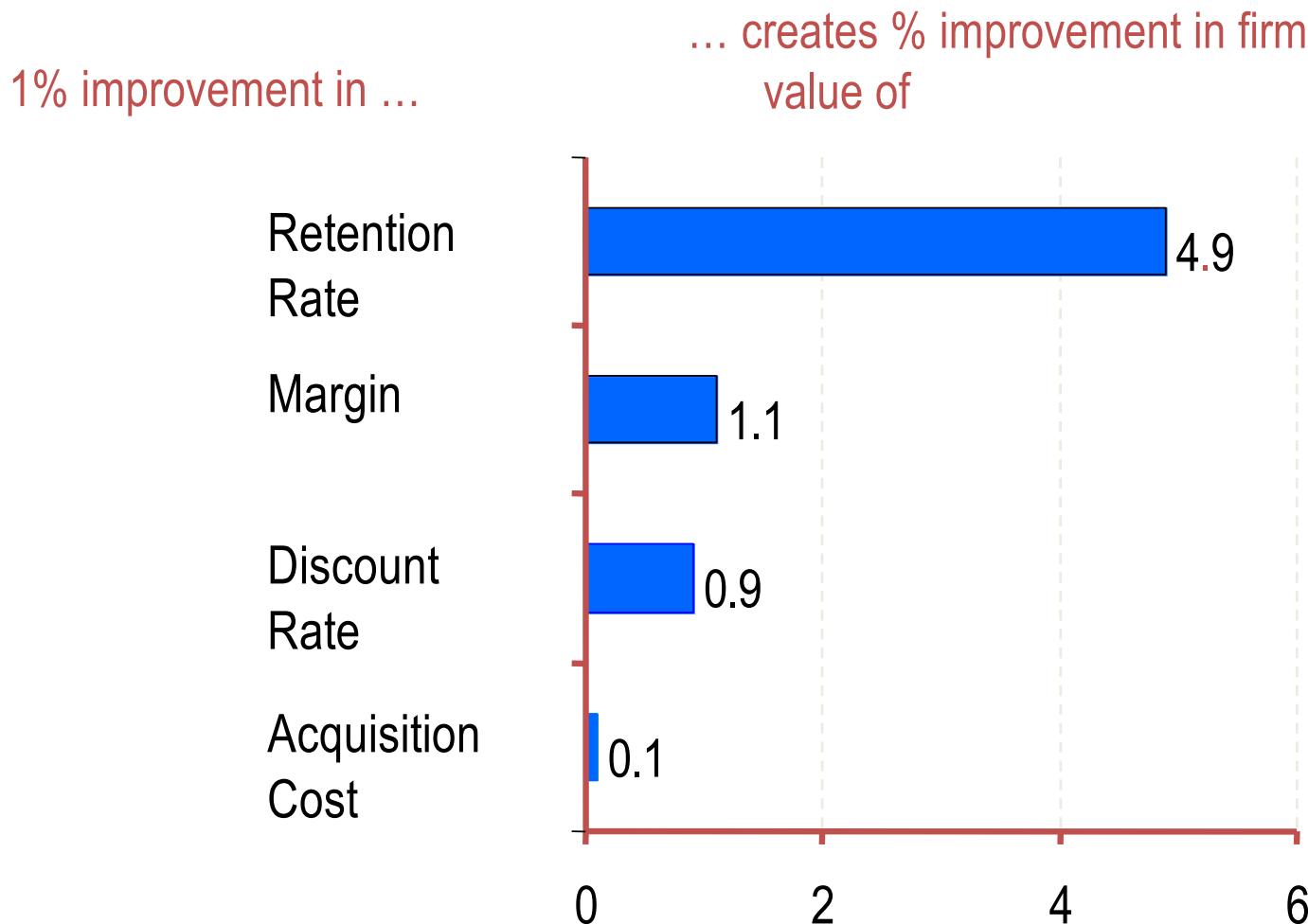
Average Monthly Customer Churn



Bundling reduces churn as much as **50%** in 3 product homes!

Source: Cox Communications

Impact of Retention on Firm Value



What Drives Retention & Loyalty?

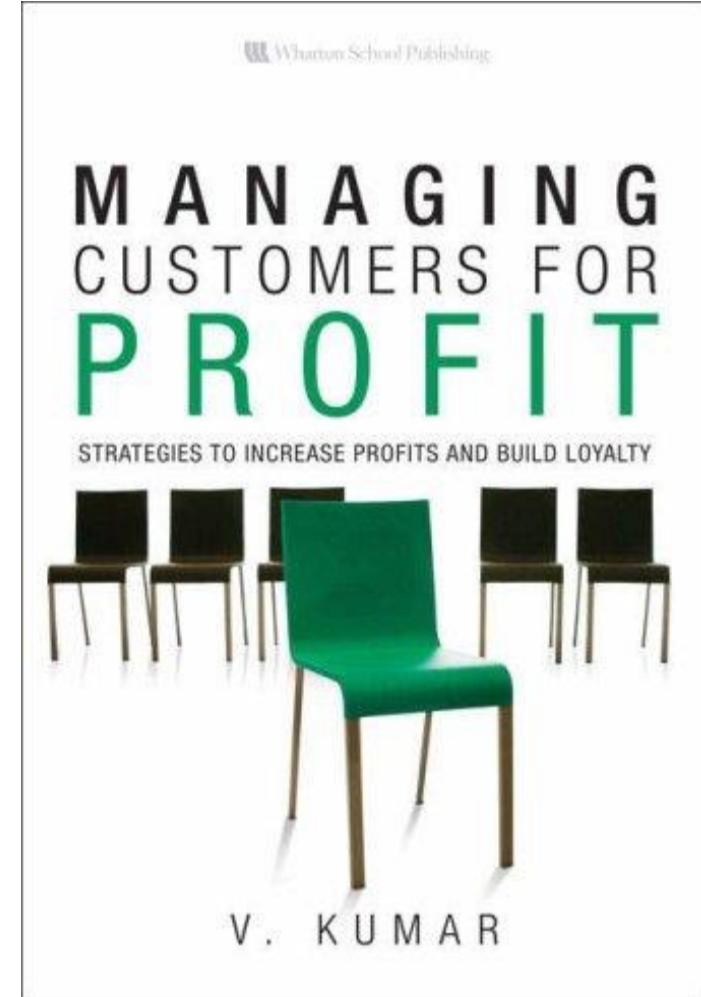
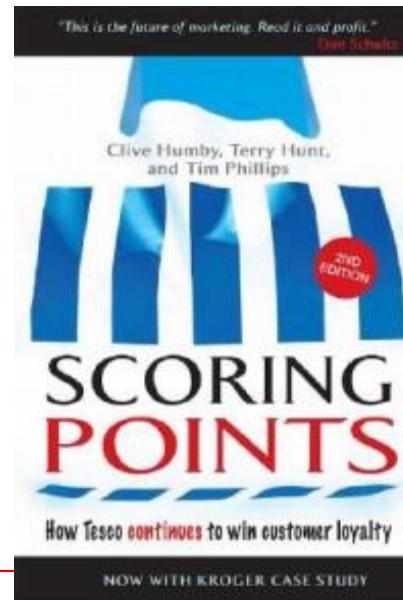
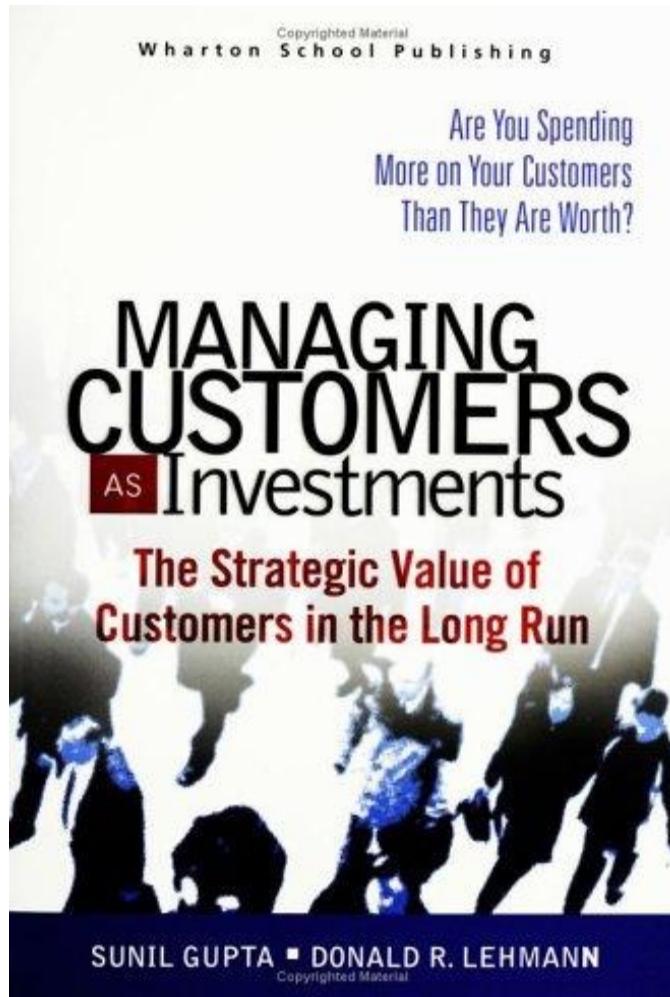


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Further reading



Conclusion

- Customers are assets
- Lifetime value of a customer is $CLV = m \left(\frac{r}{1 + i - r} \right) - AC$
- 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

Predicting CLV

Customer Lifetime Value is the net profit contribution of the customer to the firm over time.



Case study: Predicting CLV

Objective: Build a predictive model for CLV

Steps:

1. Recap from *telecommunications dataset*
2. Train a (regression) algorithm
3. Evaluate variable importance
4. Estimate CLV for a hold-out set
5. What if analysis

Telecommunications Example

- 7,032 clients
- Average CLV = \$4,400
- 15 variables
 - Online.Backup , Device.Protection, Tech.Support , Streaming.TV, Streaming.Movies, Contract, Paperless.Billing, Payment.Method, Monthly.Charges, Total.Charges, Churn.Label, Churn.Value, Churn.Score, CLTV, Churn.Reason

Train a Regression algorithm

- CLTV(y) ~ 11 variables independent variables (x)
- Removed irrelevant features:
 - Churn.Reason, Churn.Score, Churn.Value
- 70/30% Train/Validation set
- Possible models:
 - Multiple linear regression
 - Boosting Machines
 - Supported Vector Machines
 - Neural Networks

Variable Importance

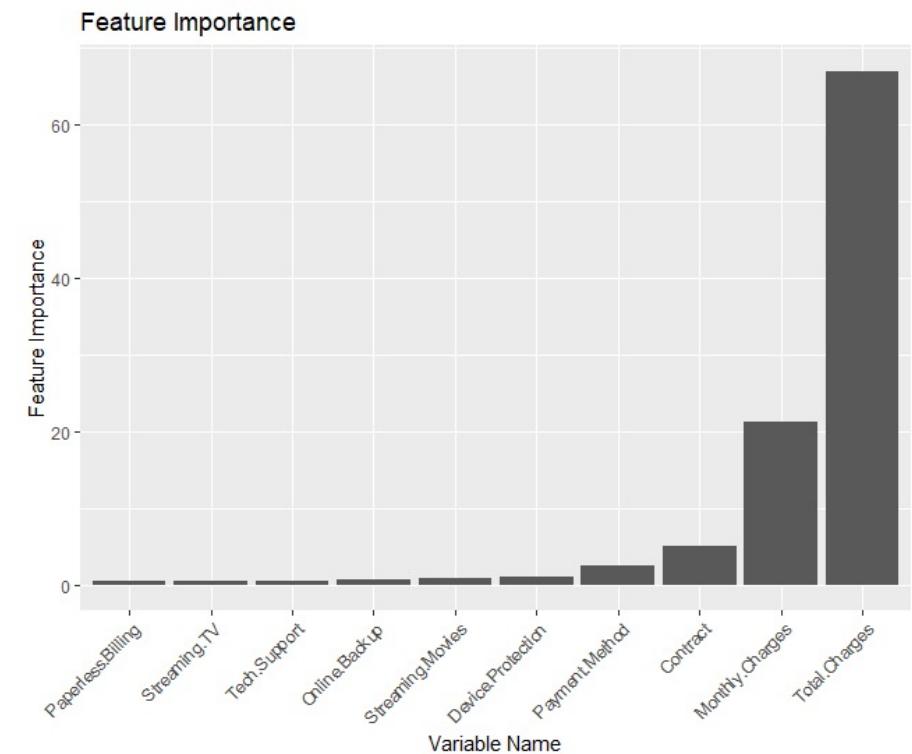
Linear Regression

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	4276.52152	79.28792	53.937	< 2e-16 ***
Streaming.MoviesNo internet service	43.46306	60.99789	0.713	0.476
Streaming.MoviesYes	-22.56086	42.03609	-0.537	0.591
ContractOne year	25.57688	45.94547	0.557	0.578
ContractTwo year	204.07690	51.85612	3.935	8.42e-05 ***
Paperless.BillingYes	40.18237	34.32516	1.171	0.242
Payment.MethodCredit card (automatic)	-0.35571	47.13839	-0.008	0.994
Payment.MethodElectronic check	58.21914	45.93396	1.267	0.205
Payment.MethodMailed check	-80.89775	49.18054	-1.645	0.100
Monthly.Charges	-7.42829	1.15013	-6.459	1.16e-10 ***
Total.Charges	0.23166	0.01238	18.706	< 2e-16 ***

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Boosting Machines



What if Analysis

- Calculate CLV for a holdout sample (baseline scenario)
- Forecast CLV by simulating different scenarios considering changes in variables
 - Streaming Movies
 - Payment Method
 - Contract
 - Monthly Charges
- Re-calculate CLV with new strategies
- Compare CLV of each strategy to the baseline

Strategies

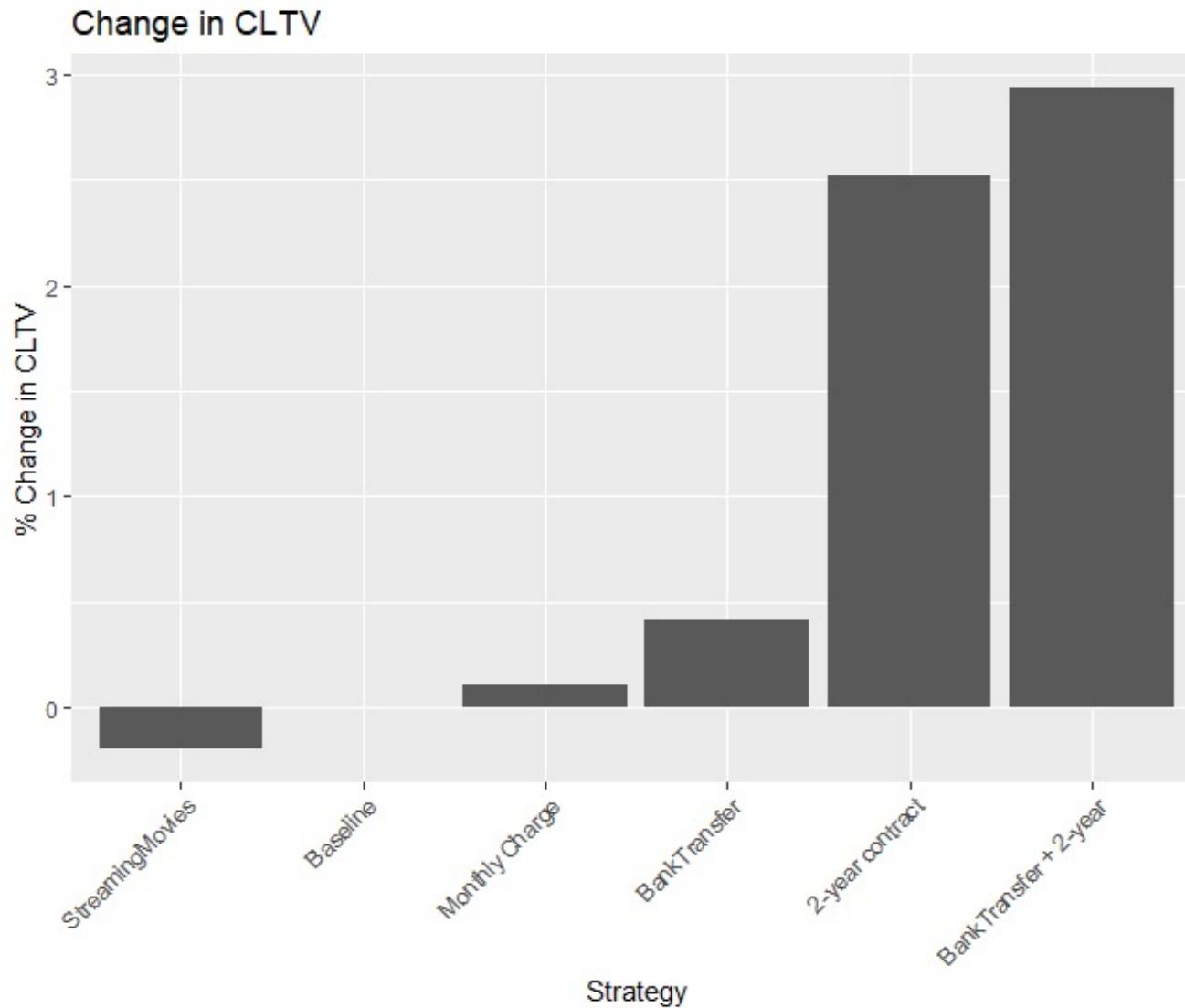
1. Baseline
2. Streaming
 - Customers buy the Streaming Movies package (ARPU)
3. Payment method
 - Migrate customers that paid mailed checks into automatic bank transfer (Lifetime)
4. Contract
 - Upgrade monthly contracts to 2-year contracts (Lifetime)
5. Payment method + Contract
 - Bank transfer + 2 year contract (Lifetime)
6. Discount
 - 1% in Monthly services (Gross Margin)

Strategies

Strategy	Average CLV	% Change over baseline
Baseline	4,414	0.00
Streaming Movies	4,405	-0.19
Monthly Charge	4,419	0.10
Bank Transfer	4,433	0.42
2-year contract	4,525	2.60
Bank Transfer + 2-year	4,544	2.94

- Best results obtained changing *Lifetime* (2 year contracts and automatic bank transfer) over changing *ARPU* or *Gross Margin*

Strategies



Conclusions

- Reviewed CLV concept
- Built a regression model to predict CLV in the telecommunication dataset
- Evaluate feature importance and impact in CLV
- Simulate different strategies
- Best results obtained changing Lifetime (2 year contracts) and (automatic bank transfer) over changing ARPU or Gross Margin

Next Time...

- Segmentation, Targeting and Positioning
- Measuring consumer preferences

Introduction to Marketing Analytics

Session 2: Understanding Customer Value and How Customers Think

Professor Ricardo Montoya