Session 3: Marketing Analytics

- **Forbes CMO Survey**
  - budget for marketing analytics to increase by 60% this year
  - currently about 9% of all marketing budgets
  - 37% of decisions are now based on marketing analytics
- **From your perspective**
  - competitive advantage
  - but recognize strengths and limitations
- **Marketing analytics apply both online and offline**

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A short history

- **1970s – foundations of "marketing science"**
  - John D. C. Little (MIT Institute Professor), "A Decision Calculus"
  - applications mostly optimization at the aggregate level
- **1980s – diffusion and more data**
  - INFORMS Society of Marketing Science formed
  - UPC revolution
- **1990s – field matures**
  - greatly improved methods.
  - insights on allocation, CRM
- **2000s – disruptive new data and channels**
  - web revolution
  - understanding of complementarities

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Representative methods

- **Allocation of marketing efforts**
  - Brita, XM, Romanian Bank
  - Simplified examples, discuss complexities
- **Customer lifetime value**
  - Calyx Flowers
  - What is a customer worth?
- **Which customers are valuable? (if time)**
  - Harrah's Casinos, Direct mail, Carnival Cruise Lines
  - RFM, B/E analyses (MR = MC)

BBVA Compass Hints

1. A spreadsheet helps you compute many metrics that are key to the BBVA Compass case.
   a) Online vs. offline efficiencies. Online done as an example; offline left for practice.
   b) Funnel measures.
   c) Search and Display efficiencies.

2. Use the spreadsheet to compute the numbers, but think carefully about the implications of the numbers (and about that which cannot be quantified).

3. Think carefully about MR vs. MC (marginal revenue vs. marginal cost). Use MR vs. MC to evaluate each search engine and each advertising network and overall spending.

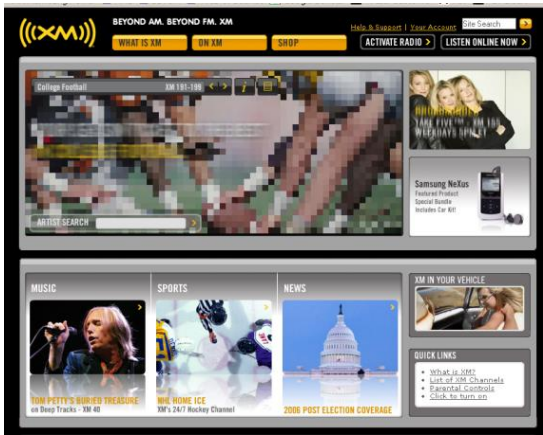
4. Neither search, display, sports, nor off line marketing stand alone.

5. So that we are all on the same page, you can assume that BBVA's revenue stream is like other banks, that is, about $240 per annum (M) from a lifetime value of $800 (CLV) stemming from a 5 year retention (r = 80%) and an 10% interest rate (i = 10%). You can deviate from the assumption of $240 if you justify the deviation.

Extra credit for computations that explain spending on the Datran Media network or argue why spending on the Datran Media network is a mistake.

Digital Satellite Radio

- **spectrum opened to allow two DSRs – XM and Sirius**
- **launched in 2002 (pre-iTunes, Spotify, etc.)**
- **big fixed costs – two satellites, repeaters in cities, talent, music rights**
- **compared to terrestrial radio**
  - commercial-free music
  - universal coverage
  - better sound quality
  - wide variety of programming
- **like Brita, a "blades and razor" business**
  - subsidize the initial radio
  - make money on subscriptions

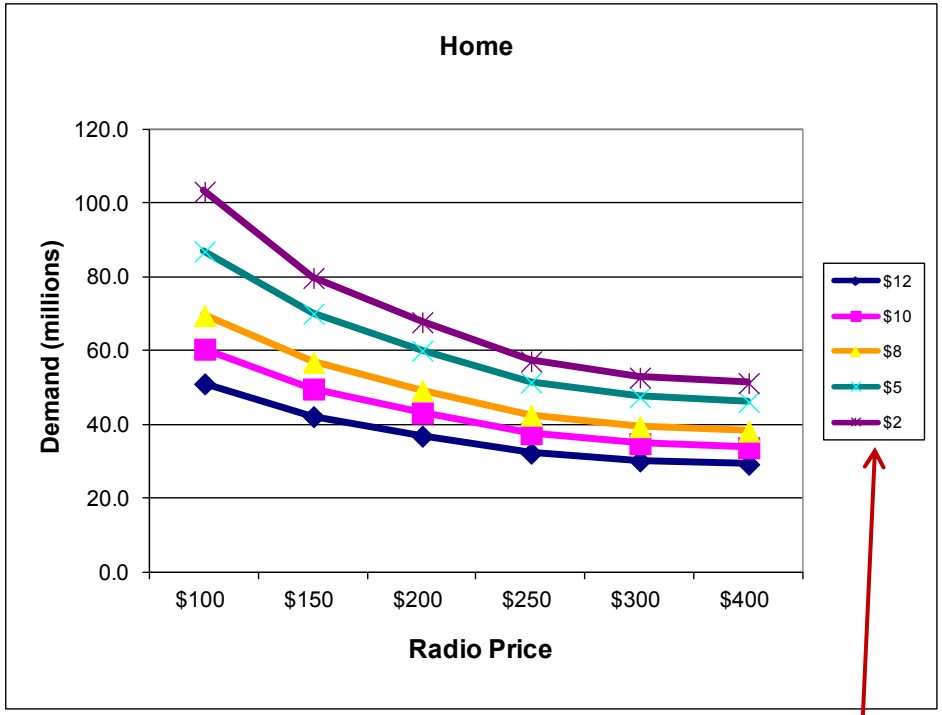


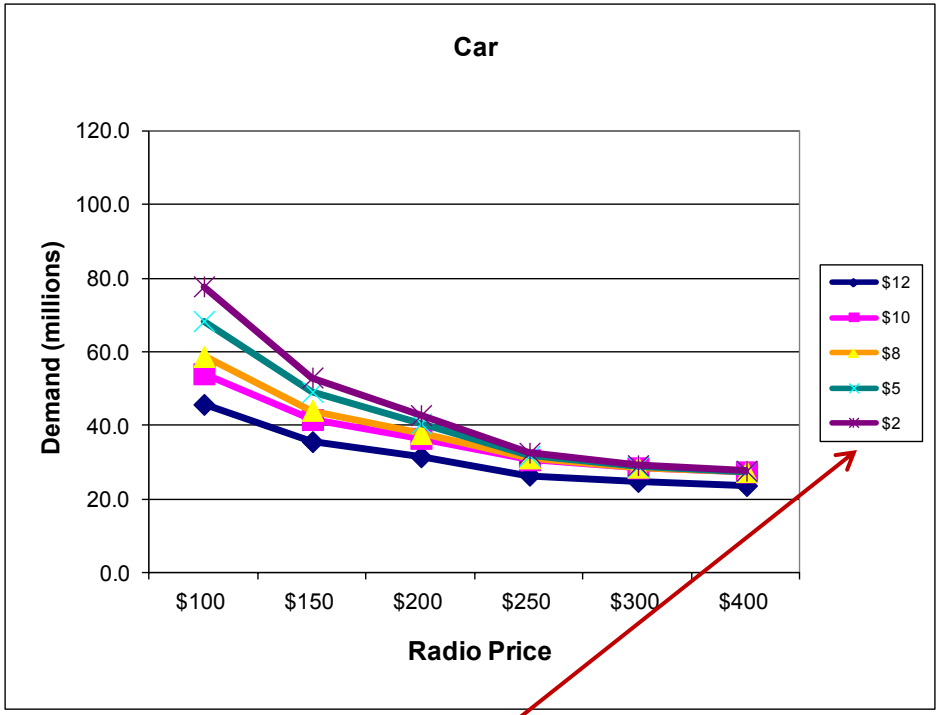
Purchase intention scales

Taking everything into account, how likely are you to subscribe to XM radio at $8 per month.

Certain, practically certain (99 in 100)	_____
Almost sure (9 in 10)	_____
Very probable (8 in 10)	_____
Probable (7 in 10)	_____
Good possibility (6 in 10)	_____
Fairly good possibility (5 in 10)	_____
Fair possibility (4 in 10)	_____
Some possibility (3 in 10)	_____
Slight possibility (2 in 10)	_____
Very slight possibility (1 in 10)	_____
No chance, almost no chance (1 in 100)	_____

Demand curves
Depends on radio and subscription prices.





Subscription price per month.

Quantify demand and revenue vs. subsidy & price

Demand projected for radios (millions), home plus car						→	Revenue/month for radios ($millions), demand x price				
	$12	**$10**	**$8**	**$5**	**$2**		**$12**	**$10**	**$8**	**$5**	**$2**
$400	53.1	61.3	65.9	73.9	79.1		$637	$613	$527	$370	$158
$300	55.1	63.5	68.3	76.5	82.1		$661	$635	$546	$383	$164
$250	58.9	68.4	73.9	83.4	89.9		$707	$684	$591	$417	$180
$200	68.5	79.8	87.2	100.7	110.7		$822	$798	$698	$504	$221
$150	77.9	91.4	101.1	119.3	132.9		$935	$914	$809	$597	$266
$100	96.9	114.6	128.4	155.4	181.0		$1,163	$1,146	$1,027	$777	$362

Add home and car.

Revenue/month = price * subscriptions per month

Consider subsidy

Demand projected for radios (millions), home plus car						→	Revenue/month for radios ($millions), demand x price				
	$12	$10	$8	$5	$2		$12	$10	$8	$5	$2
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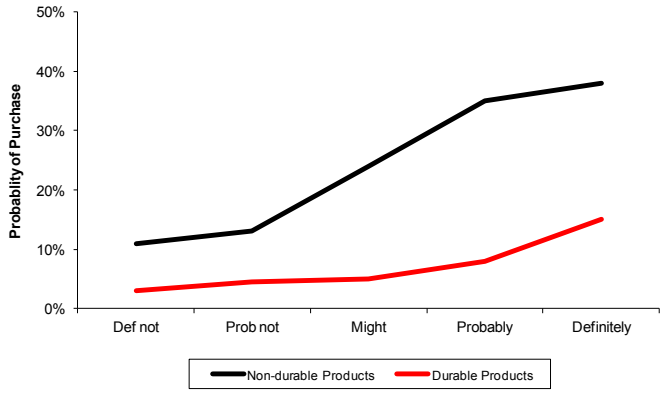
Net revenue/month assuming 5 year payback						Net revenue/month assuming 10 year payback				
	$12	$10	$8	$5	$2	$12	$10	$8	$5	$2
$400	$544	$505	$411	$239	$18	$590	$559	$469	$304	$88
$300	$500	$449	$346	$158	($77)	$580	$542	$446	$270	$44
$250	$500	$443	$331	$124	($136)	$603	$564	$461	$270	$22
$200	$541	$471	$340	$91	($232)	$682	$634	$519	$297	($6)
$150	$570	$486	$335	$38	($357)	$752	$700	$572	$317	($45)
$100	$652	$542	$351	($41)	($591)	$908	$844	$689	$368	($115)

Subsidy spread over 60 months (5 years).

Subsidy = amount manufacturer needs to have incentives to sell radio – amount retailer pays manufacturer.

Other considerations

- **"intent" scales over-forecast demand**



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$100	$652	$542	$351	($41)	($591)

	$12	$10	$8	$5	$2
$400	$123	$115	$93	$54	$4
$300	$113	$102	$79	$36	($17)
$250	$113	$101	$75	$28	($31)
$200	$123	$107	$77	$21	($53)
$150	$129	$110	$76	$9	($81)
$100	$148	$123	$80	($9)	($134)

- **compare projected revenue to**
  - cost of advertising
  - marginal cost of talent and programming
  - fixed cost of satellites and infrastructure

XM – what happened

- launched at $12.95.
- iPod and other technology became more car-based
- How do you differentiate vs. Sirius Satellite Radio?
- Howard Stern – $500M; MLB – $650M; Oprah – $55M.

Basic ideas

- **laboratory experiments (e.g., BASES) or market research (e.g., intent scales) give you response curves**
- **use the response curves to compute revenue at various costs**
- **there is some "art" as well as science**
- **compare to fixed costs, subsidies, etc.**
- **identify the best marketing allocation**
- **however,**
  - do not do it blindly
  - use judgment and strategic positioning

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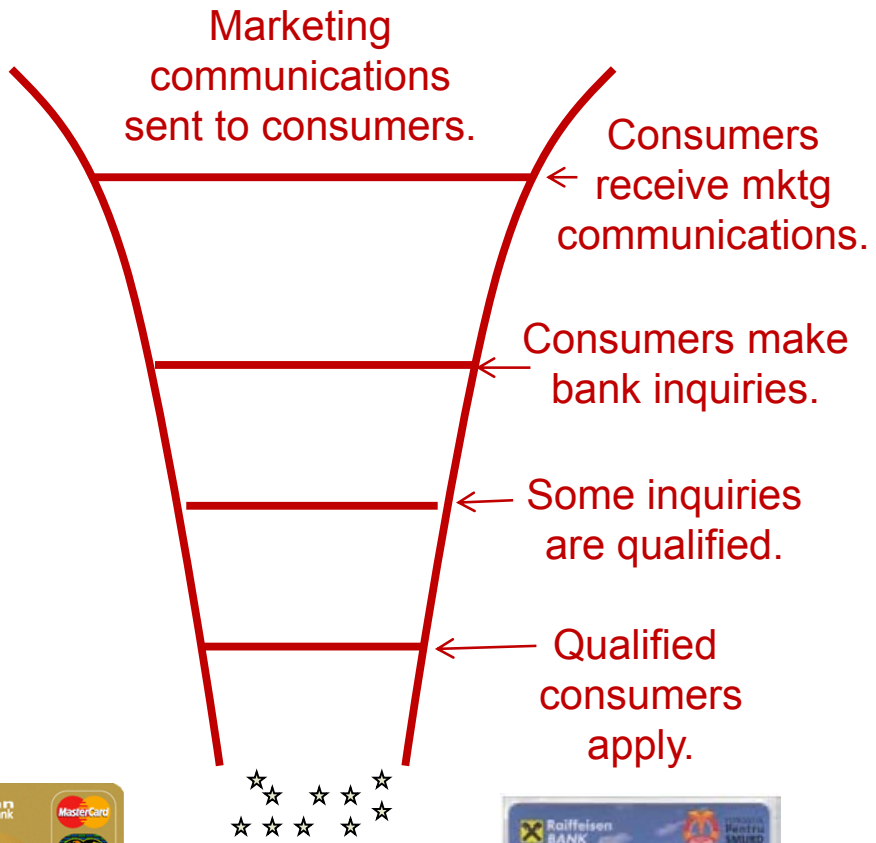
Any questions on forecasting spreadsheets?

Next topic: funnel measures.

Romanian Bank

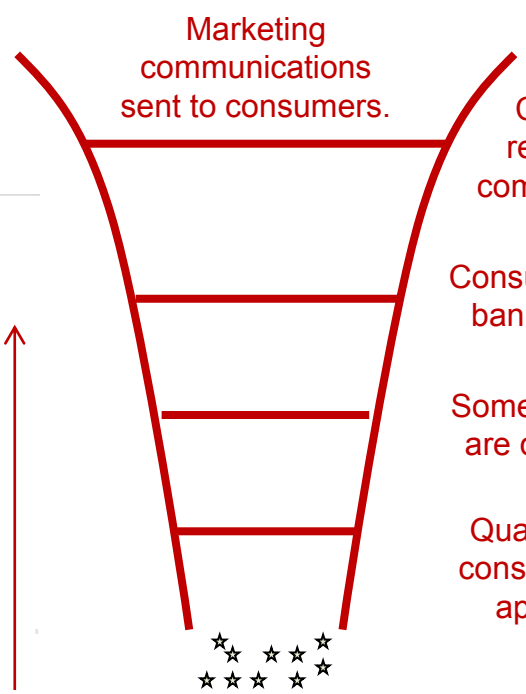
- **Concept of a funnel**
- **Can diagnose at all levels – which are working, which are not.**
- **Goal is to get conversions out the end of the funnel and do so cost effectively.**



Using the funnel

Funnel measures

	Prospects Reached	Inquiries	Qualification Rate	Conversion Rate
Direct mail	2,500,000	3.0%	60%	85%
Take ones	2,000,000	2.5%	30%	85%
FSIs	3,500,000	1.5%	30%	85%
Direct sales	60,000	25.0%	60%	85%
Branch cross-sell	50,000	50.0%	90%	85%
Total or average	8,110,000	16.4%	54.0%	85.0%
No direct mail	5,610,000	19.8%	52.5%	85.0%



Hit rate = inquiries * qualification rate * conversion rate (multiply the three columns)

Cards sold = hit rate * prospects

Computing marketing effectiveness

All customers

	Cost per item	Hit Rate
Direct mail	0.50 €	1.5%
Take ones	0.10 €	0.6%
FSIs	0.05 €	0.4%
Direct sales *	0.50 €	12.8%
Branch cross-sell	1.00 €	38.3%
Total or average	0.43 €	10.7%
No direct mail	0.41 €	13.0%

* 3,000 euros per rep at 10 branches

We can repeat for

- affluent customers
- non-affluent customers
- various combinations of marketing tactics

Cost per customer = (cost per item)/(customers per item)
= (cost per item)/(hit rate)

Can now make decisions

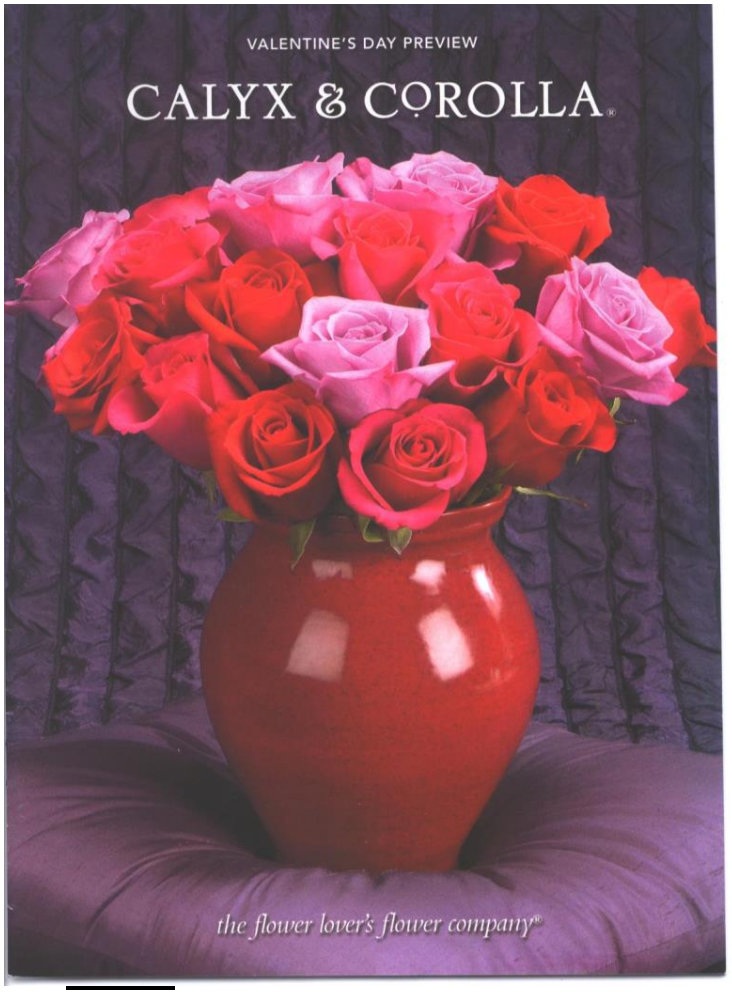
- **Decision to launch**
  - compare revenue and costs
- **Compare to**
  - fixed costs of bank
  - fixed costs of advertising
- **Same concept for**
  - web-based advertising
  - keyword advertising
  - search-engine optimization

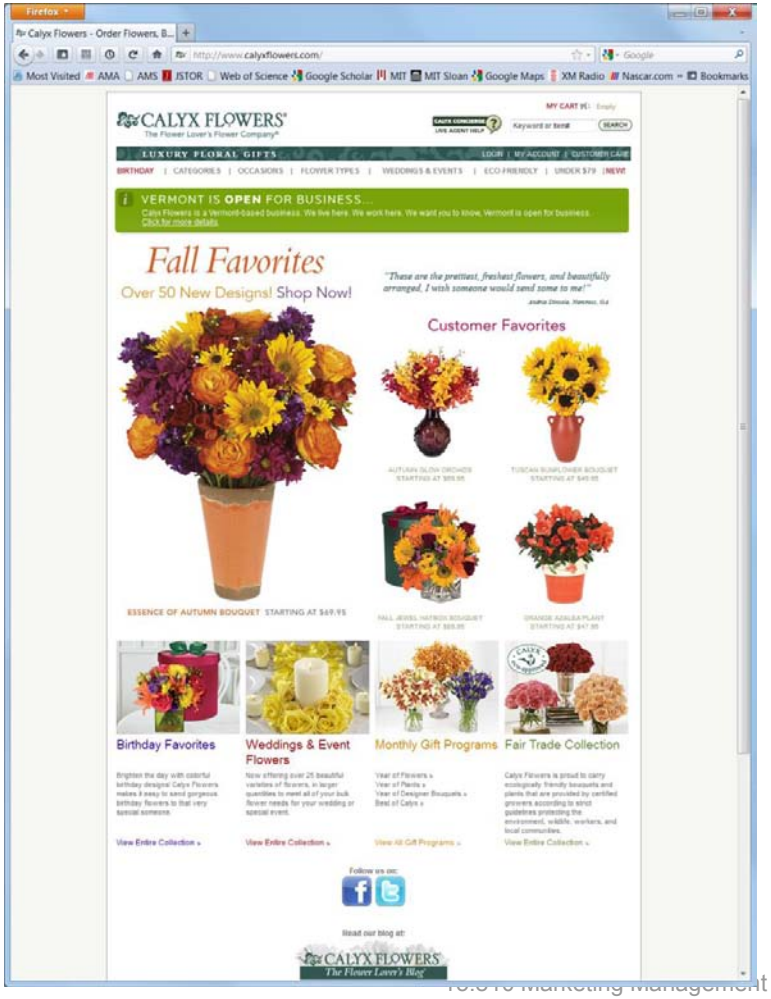
Basic ideas – funnel

- Goal is sales out the end of the funnel.
- Use funnel to diagnose bottlenecks.
- Compute effectiveness of marketing actions.
- Compare to revenue, invest if MR > MC.
- Compare to fixed costs, invest if net revenue > costs.

Any questions on funnel analytics?

Customer lifetime value





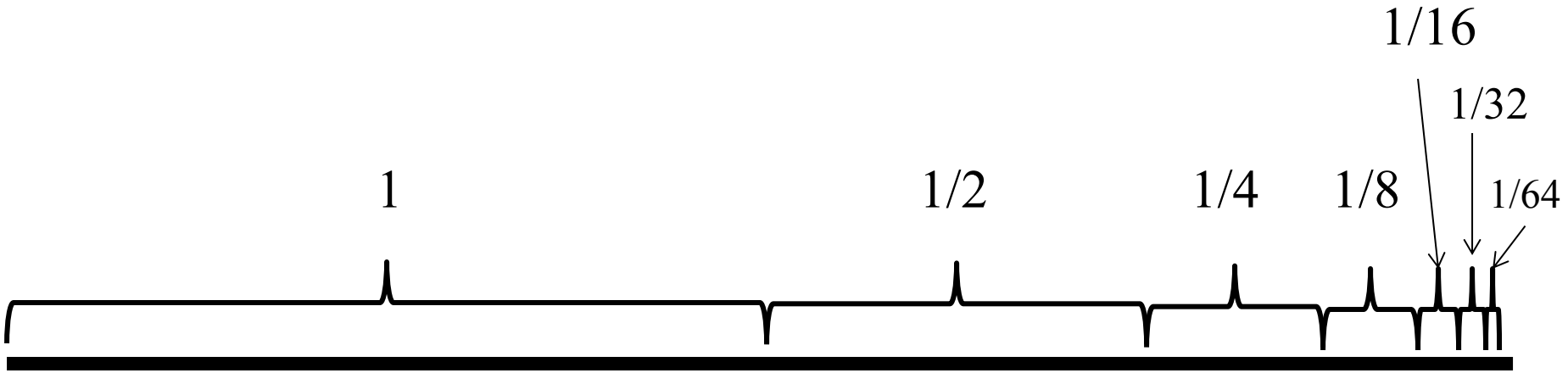
Calyx Flowers

32¢/catalog	1% response = $32.00	
8¢/rented name	1% response = $8.00	
Costs of customer acquisition		$40.00
Average revenue/sale	+ $67.00	
Cost of flowers	- $13.40	
Shipping & handling	- $14.00	
Net revenue/sale		$39.60

How do you make money?

Retention formula

$$1 + .8 + (.8)^2 + (.8)^3 + (.8)^4 + \ldots = 1/(1 - .8) = 5$$



$$2 = \frac{1}{1 - \frac{1}{2}}$$

$$CLV = \frac{M - C}{1 - r} - AC$$

Retention formula

$$1 + .8 + (.8)^2 + (.8)^3 + (.8)^4 + \ldots = 1/(1 - .8) = 5$$

Retention	Lifetime value
95%	20
90%	10
85%	6.7
80%	5
75%	4
50%	2

Recall XM

Other considerations

- **Discounting future cash flows (*i*)**
- **Inflation in prices (*u*)**
- **Cross-selling (*cs*)**
- **Increased frequency**
- **Decreased costs of selling**
- **Decreased costs of flowers**
- **Word of mouth**
- **Etc.**

$$\frac{1}{1-r} \rightarrow \frac{1}{1-r(1+u+cs)+i}$$

inflation cross-selling interest rate

Questions

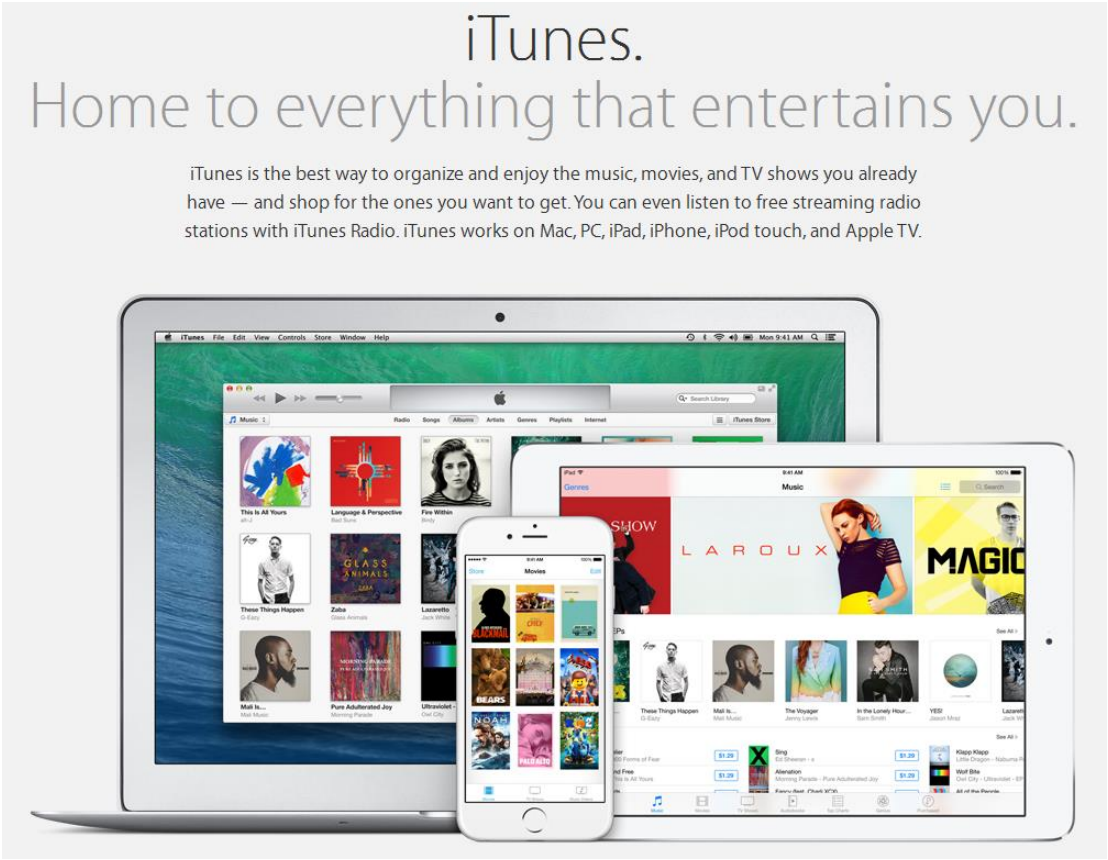
- **Suppose we send bad flowers, how much would we be willing to pay to keep the customer?**
- **Are all customers the same? How do we keep track?**

- **Can we expect the hit rates (1%) to continue?**

Should Calyx advertise on TV?

- **Suppose you can advertise at 42¢ per household?**
  - What response rate do you need?
  - Could it vary by programming?
- **Suppose the average sale is $34/bouquet (vs. $67)?**
- **Suppose the average catalog response is 4% (vs. 5%)?**
- **Suppose the retention rate is 75%?**
- **Would you ever give away a vase?**

CLV for markets with "blades and razors" is common



Summary of CLV

CALYX FLOWERS
LUXURY FLORAL GIFTS

- **Customer lifetime value**
  - initial sales vs. retention
  - evaluate marketing actions – catalog mailings, advertising
  - evaluate service costs

- **CLV works hand in hand with marketing allocation**
  - can compare CLV for different marketing strategies
  - can make decisions on whether to launch new service or product
  - useful whether a big company or entrepreneur
    - if not sure of demand, at least can compute breakeven (B/E)
    - if not sure of response rate, can estimate from industry norms

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Any questions on CLV?

Doing CLV and allocation by customer or customer-group

- **Some examples so far**
  - Romanian Bank – all customers or just affluent customers
  - Calyx & Corolla – track revenue and retention by customer number

- **Focused examples**
  - Harrah's Entertainment
  - Direct-mail RFM
  - Carnival Cruise Lines

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Harrah's Entertainment

- **Total Gold – player-card program to enhance loyalty**
  - created a 300-gigabyte transactional database
  - names, addresses, ages, gambling spending, preferences
  - supplement with surveys and qualitative interviews
- **Identify gamblers who would lead to "same-store" growth**
- **E.g., 26% of the gamblers generated 82% of revenues**
  - were they the "whales?"
  - if so, how do we identify them?

Carnival Cruise Lines

- **Like Harrah's, Carnival has a "Sail & Sign" card**
- **Like Harrah's, Carnival has a very large transactional database**

- **Carnival Cruise Lines**
  - over 20 ships
  - typical ship has about 3,000 passengers
  - typical cost about $1,500-$2,000 per person/per week
  - but many $300 3-day cruises in the shoulder seasons
  - families, singles, 35-55, $65K in annual income

CLV and Transactions

- **CLV**
  - in a typical cruise, 2/3 are new to Carnival
  - CLV ~ 2 cruises, 12-25 months apart
  - 85% booked by agents at a 10% commission

Where is Carnival?

	Low Customizability	High Customizability
High Repurchase Frequency	Loyalty rewards Customer tracking	Personalized operations Differentiated offerings
Low Repurchase Frequency		Acquisition customized Analytics on demographics, etc. More sales during transaction

Where is Harrah's?

Banner morphing on CNET

Among context-targeted consumers

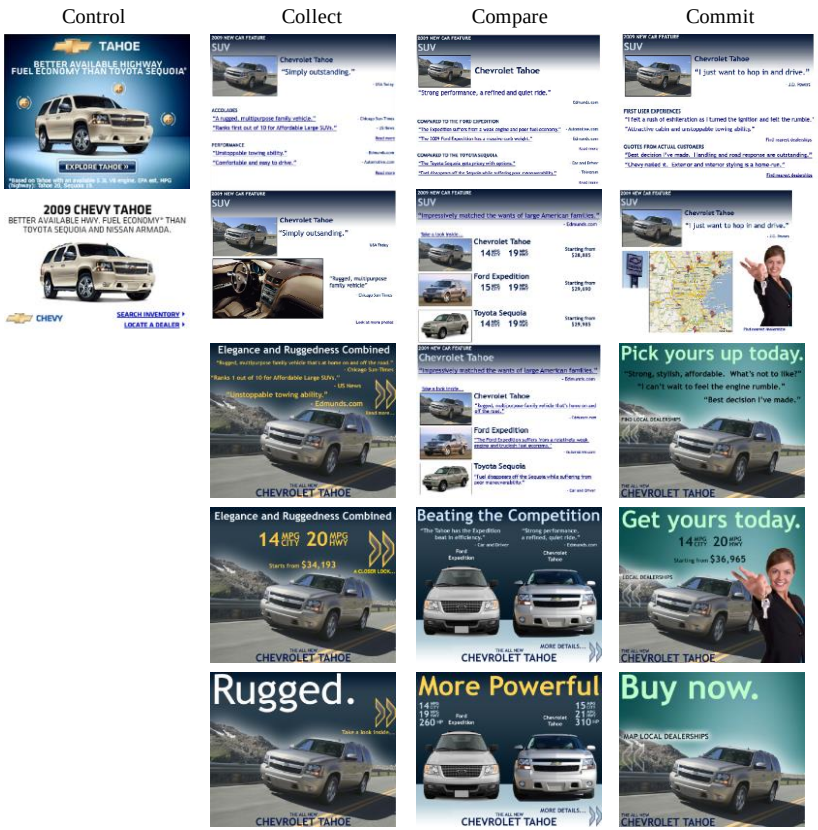
- click-through per banner
  - morphing: 0.307 of 1%
  - no morphing: 0.168 of 1%
  - 83% lift $p < 0.01$

- click-through per consumer
  - morphing: 0.250 of 1%
  - no morphing: 0.127 of 1%
  - 97% lift $p = 0.028$

Banner morphing at GM

Matching on cognitive-style and buying stage.

- **click-through per banner**
  - matched: 0.97%
  - control: 0.26%
  - 245% lift $p < 0.01$
- **click-through per consumer**
  - matched: 15.9%
  - control: 9.6%
  - 66% lift $p < 0.01$
- **brand consideration**
  - matched: 42.8%
  - control: 32.9%
  - 30% lift $p < 0.01$
- **purchase likelihood**
  - matched: 3.28%
  - control: 3.05%
  - 8% lift $p < 0.01$



Analytics summary

- Allocation of marketing resources – how much on advertising?
- Customer lifetime value (CLV) – how much to spend to retain?
- Identifying profitable customers – whom to serve?
- Same store or same transaction – get more from each transaction.
- Simple analytics powerful. Complex analytics build on simple ideas.

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