

# Customer Relationship Management (CRM)

## MK 8710



Center for Excellence in  
BRAND & CUSTOMER MANAGEMENT

## Session 4 – October 29

### Measuring and Maximizing Customer Lifetime Value (Part III)

***V. Kumar, PhD***

*Regents' Professor,*

*Richard and Susan Lenny Distinguished Chair & Professor of Marketing,  
Executive Director, Center for Excellence in Brand & Customer Management,  
and Director of the Ph.D. Program in Marketing*

*J. Mack Robinson College of Business, Georgia State University, Atlanta GA  
and*

*Chang Jiang Scholar, HUST, Wuhan China.*

*Fellow, Hagler Institute for Advanced Study, TAMU, College Station, TX  
Senior Fellow, Indian School of Business, India*



***SHOULD WE ENCOURAGE ADOPTION OF  
ADDITIONAL TRANSACTION CHANNELS?***

sephora catalogs

shop catalogs

download catalog

catalog item search

request a catalog



**Now available!**  
Sephora's latest catalog, **Sheer Beauty Spring 2004** is now online.

- ▶ [Shop our Sheer Beauty catalog online](#)
- ▶ [Download the Sheer Beauty catalog pdf](#)
- ▶ [Search our catalog for an item](#)
- ▶ [Sign up to request a catalog](#)

#### Three Ways to Shop

##### Order Online:

Click on the product you want in the catalog, place it in your shopping basket, and checkout.

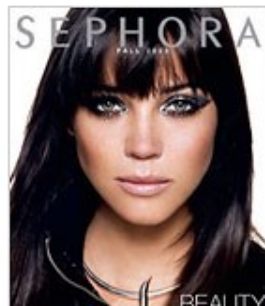
##### Order by Phone:

1-877-SEPHORA (1-877-737-4672)  
Mon - Fri 6 AM - 6 PM PST; Sat & Sun 8 AM - 5 PM PST

##### Visit a Sephora Store:

Visit our [Store Locator](#) for a store near you.

past catalogs



# *Drivers of Multi-channel Shopping and Behavioral Characteristics of Multi-channel Shoppers*

## Drivers

### Customer Characteristics

- Cross-buying (+)
- Returns (∅)
- Customer Initiated Contacts (+)
- Number of Web Based Contacts (+)
- Tenure (+)
- Purchase Frequency (+)

### Supplier Specific Factors

- Number of different channels of contact (+)
- Type of Contact Channel (+)
- Contact Channel Mix (+)

### Customer Demographics

- Number of Employees (+)
- Annual Sales (+)
- Industry Category

## Multichannel Shopping

### Behavioral Characteristics

- Revenues (+)
- Share of Wallet (+)
- Past Customer Value (+)
- Likelihood to Stay Active (+)
- CLV (+)

## *Comparison of Means across Multichannel Customers and Single Channel Customers*

	<b>Multichannel Shoppers (Segment 1)</b>	<b>Single Channel Shoppers (Segment 2)</b>	<b>Difference</b>
Revenues	\$434,730	\$193,270	\$241,460***
Share of Wallet	0.61	0.20	0.41***
Past Customer Value	\$373,660	\$152,500	\$221,160***
Likelihood to Stay Active	0.56	0.11	0.45***

\* significant at  $\alpha = 10\%$

\*\* significant at  $\alpha = 5\%$

\*\*\* significant at  $\alpha < 1\%$

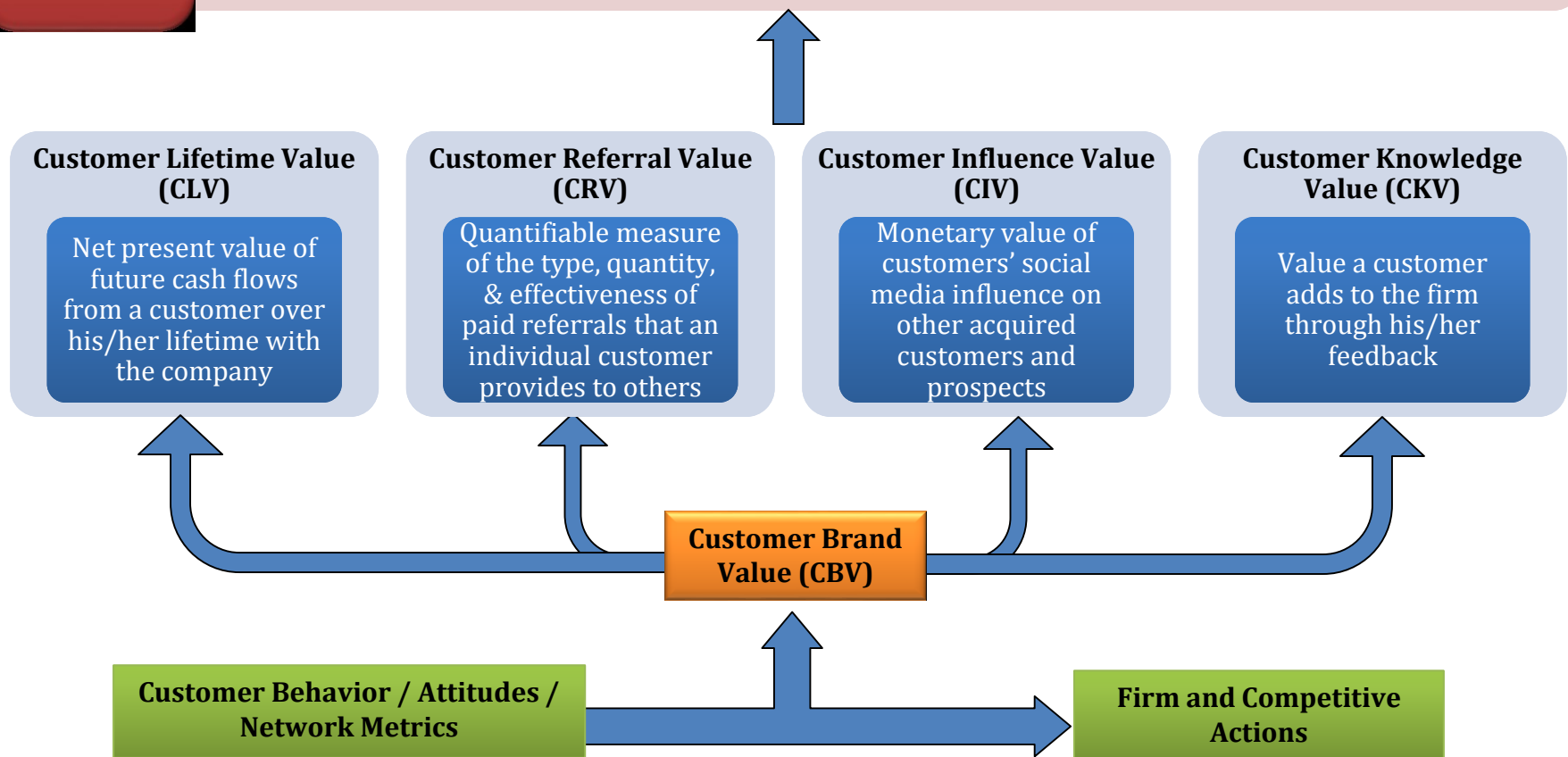
## *CLV across transaction channels*

Transaction Channel	Number of Customers	Mean CLV per Month (USD)
Channel 1	40,000	\$ 89
Channels 1 & 2	20,000	\$ 236
Channels 1 & 3	15,000	\$ 567
Channels 1, 2 & 3	8,500	\$ 1223

# Conceptual Approach to Measure CEV

## Customer Engagement Value (CEV)

- Total value provided by customers to the firms through their (a) purchase transactions with the firm, (b) ability to refer other customers to the firm, (c) power to positively influence other customers about the firm's offerings, and (d) knowledge about the firm's product/service offerings in providing a feedback to the firm.



Source: Kumar, V. (2013), "Profitable Customer Engagement: Concepts, Metrics & Strategies", Sage Publications.



HOW DO YOU **HOLD ON TO**  
YOUR CUSTOMERS?



## *Strategic Questions*

- Which customers are likely to quit? If so, when?
- Should we intervene?
- Which customers to intervene? And when?
- Through which channel to intervene?
- What to offer?

**The answers lie in building ‘propensity to quit’ models and integrating them with CLV-based models**

# *The Answer – Dynamic Churn Model*

## Past Revenue and Past Service Cost:

Revenues and Service costs from each customer in the previous time period



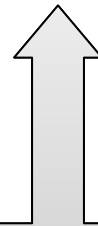
$$\text{Time Until Churn} = f\{\text{Past Revenue, Past Cost, Other Exchange Characteristics, Customer Demographics}\}$$

Time (in months) until customer 'i' churns

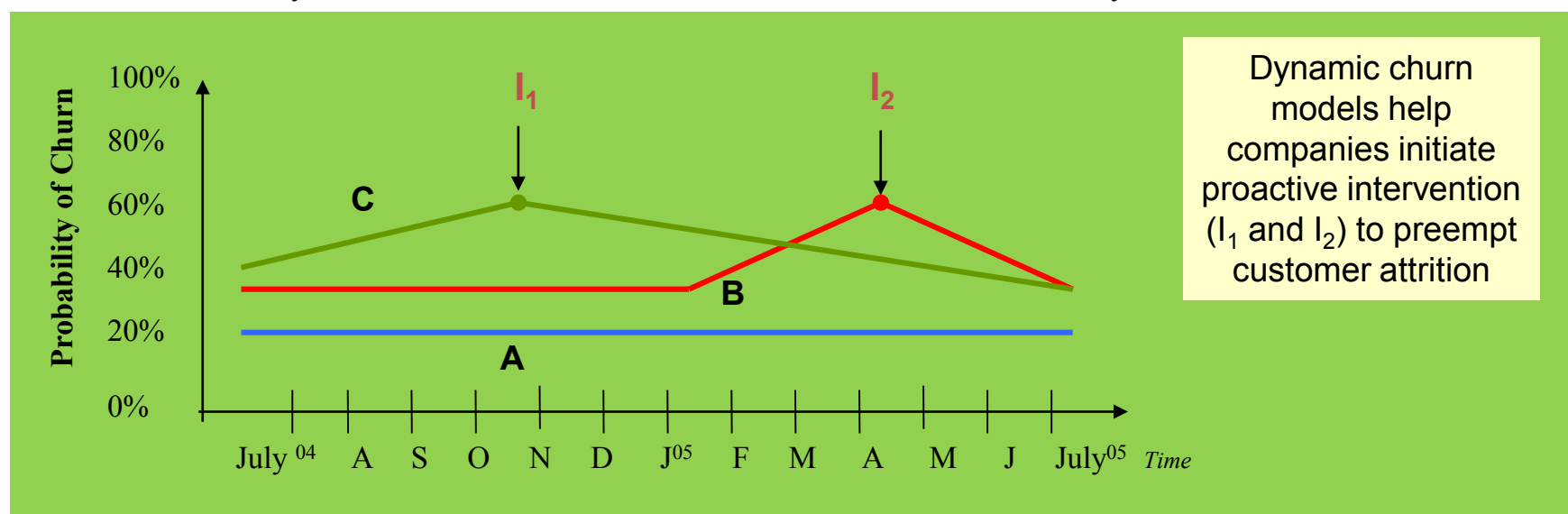
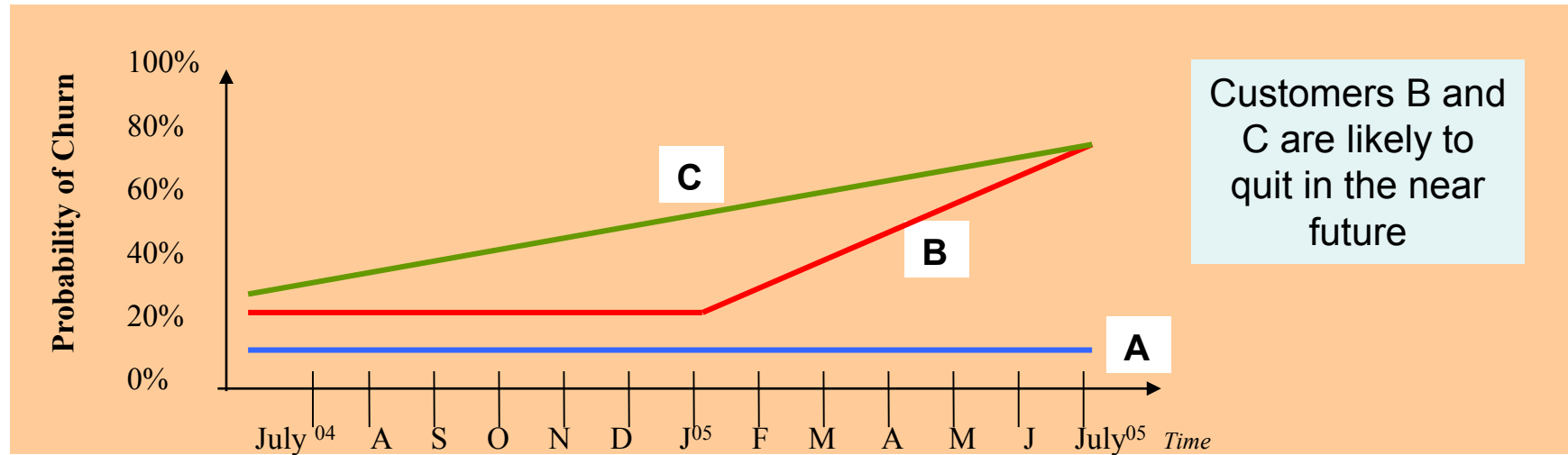


## Other Exchange Characteristics Include (but are not limited to):

- Number of Products Purchased
- Product balance and Growth of product balance
- Number of Channels used for Banking



# Predicting Propensity to Quit & Influence of Proactive Intervention Strategy



# *Saving the Customer - The Churn Model Performance*

*- an illustration (Financial Services Industry)*

	Control Group	Test Group
<b>Number of customers sampled at the beginning of the study</b>	2601	2602
<b>Time period of study</b>	1 year	1 year
<b>Number of customers at the end of the study</b>	1768	2412
<b>Number of customers lost</b>	833	190
<b>Number of customers saved</b>	-	643
<b>Revenue gain</b>	-	\$ 385,800
<b>Retention Cost</b>	-	\$ 40,000
<b>Incremental Profit</b>	-	\$ 345,800

*Let's go back to the question:*

Dollar value of  
the first  
purchase

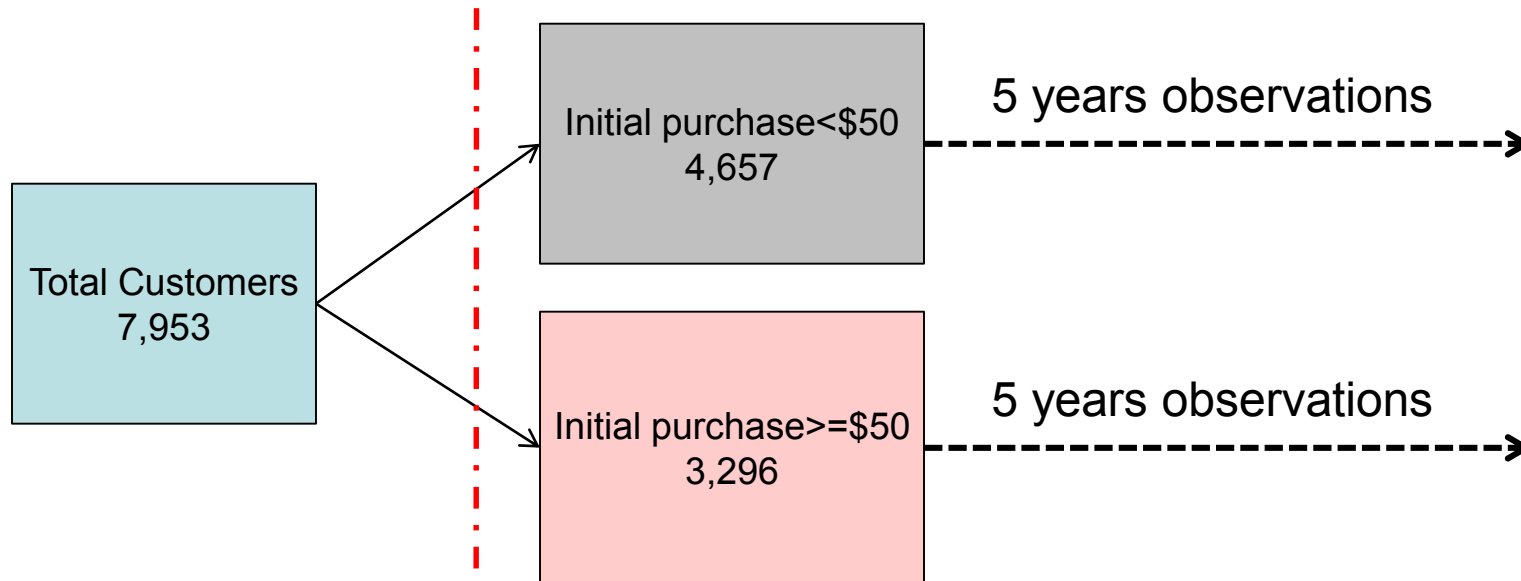


Customer  
Lifetime Value

Let's look at this exercise!!

# Assignment 6: Lifetime Value of Customers

- Mail order catalog firm



Manager: Should I mail catalogs to all customers?

## *Lifetime Value of Customers (Contd.)*

$$LTV = \sum_{t=1}^n \frac{P_t(Q_t\pi_t)}{(1+r)^t} - \sum_{t=1}^n \frac{(D_t + R_t)}{(1+r)^t} - A$$

- $P_t$  = the probability of purchase in period  $t$
- $Q_t$  = the dollar amount of the items purchased in period  $t$
- $\pi_t$  = the margin on purchases in period  $t$
- $r$  = the interest rate
- $D_t$  = costs to develop the relationship in period  $t$
- $R_t$  = cost to retain the customer in period  $t$
- $A$  = initial acquisition cost
- $n$  = the number of periods

# Decomposition of the Computation

Past data: Probability=1

Tables 1,2,3

Average Margin on orders = 42%

•Number of catalogs mailed annually to each acquired customer = 5

•Cost of mailing a catalog to a customer = \$0.75

$$LTV = \sum_{t=1}^n \frac{P_t(Q_t \pi_t)}{(1+r)^t} - \sum_{t=1}^n \frac{(D_t + R_t)}{(1+r)^t} - A$$

Annual interest rate = 20%  
 1+r = 1+interest rate

•New Customer Acquisition costs  
 •Average cost to obtain prospect name = \$0.10  
 •Average cost to send initial catalog = \$0.75  
 •Average response rate = 2.3 %



# Lifetime Value of Customers - Illustration

Table 1: <\$50 Initial Purchase Cohort

# Orders		5	
0	X	3837	=0
1	X	626	=626
2	X	141	=282
3	X	38	=114
4	X	10	=40
5	X	3	=15
6			=0
7			=0
8	X	2	=16
9			=0
10			=0
11			=0
12			=0
13			=0

$$\frac{(Q_t \pi_t)}{(1+r)^t} \text{ for } t=5$$

$$1,093 \times (\$53.63 \times 42\%) = \$ 24,619.39$$

$$\frac{\$ 24,619.39}{(1+0.2)^5} = \frac{\$9,893.98}{4,657} = \$ 2.12$$

Table 3: Initial and Repeat Order \$ Amounts by Year and Group

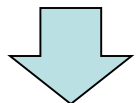
Group		\$ amount of initial order	\$ amount of repeat order- Year 5
Initial order	N	4657.00	820.00
<\$50	Minimum	-35.00	4.38
	Maximum	50.00	484.91
	Mean	31.84	53.63
	Std. deviation	9.97	39.31

# Lifetime Value of Customers - Illustration (contd.)

$$\sum_{t=1}^5 \frac{(D_t + R_t)}{(1+r)^t} = \sum_{t=1}^5 \frac{(5 * 0.75)}{(1+0.2)^t} = 11.22$$

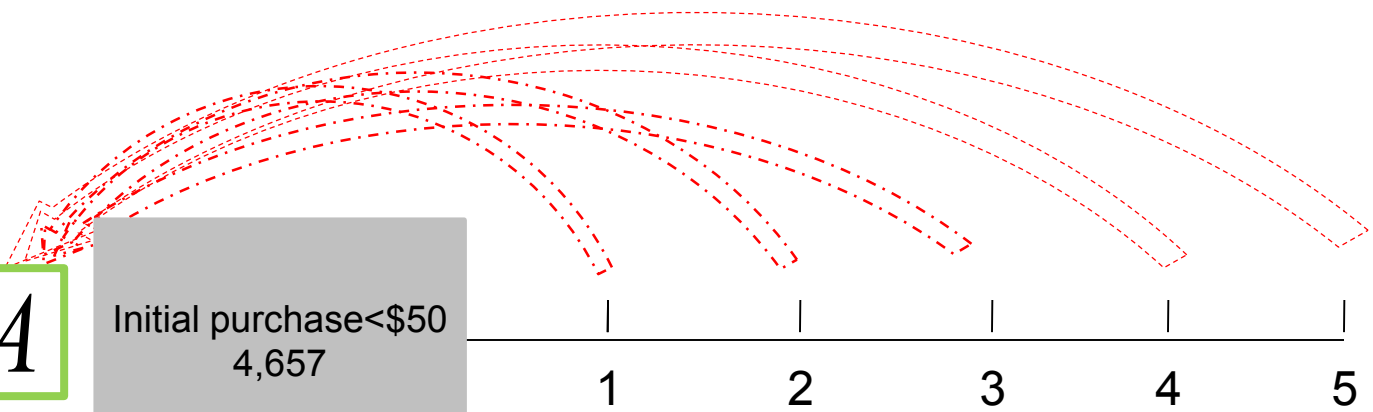
$$A = \frac{4657 * (0.1 + 0.75)}{2.3\% * 4657} = 36.95$$

$$\sum_{t=1}^5 \frac{P_t(Q_t \pi_t)}{(1+r)^t} - \sum_{t=1}^5 \frac{(D_t + R_t)}{(1+r)^t} - A$$



**CLV**

Initial purchase <\$50  
4,657



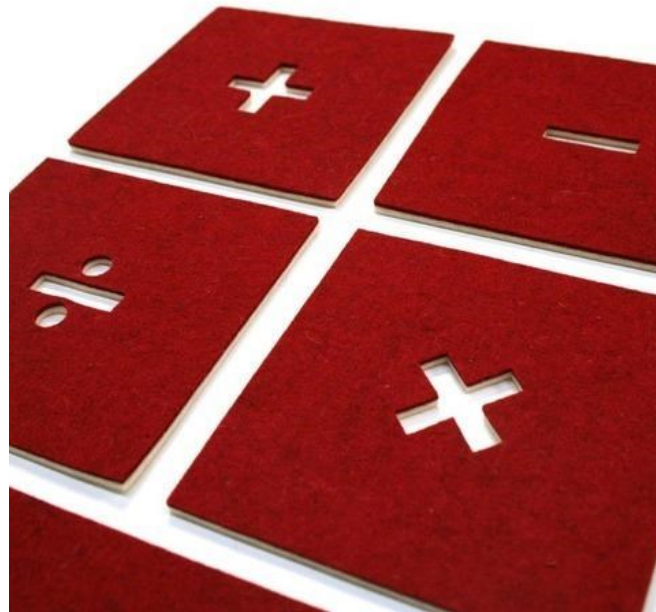
# Questions

- What is the average lifetime value of a customer in each of the two groups
  - A) Group1- # of Customers with initial purchase (Including Initial Purchase) < \$50,  
Group2- # of Customers with initial purchase (Including Initial Purchase) >= \$50 ?
  - B) Group1- # of Customers without initial purchase (Excluding Initial Purchase) < \$50,  
Group2- # of Customers without initial purchase (Excluding Initial Purchase) >= \$50 ?

Is the decision to mail all catalogs to all customers justified in light of the above analysis?

- What other methods of grouping these customers can be considered that will help us differentiate customers based on their value?
- What can we predict in terms of behavior in the coming year? What additional analysis would we need?

## *LTV Computation in Class*



*End of Session 4*