MODEL YOUR CUSTOMER

Presented by
David Haertzen
First Place Learning

About the Author

- Enterprise and information architect
- Provided services to organizations such as: Allianz Life, 3M, Mayo Clinic, IBM, Fluor Daniel, Procter & Gamble and Synchrono – from start up to multinational.
- Experienced author
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  - Profitable Analytics
  - Data Modeling
  - Data Warehousing
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  - Business Intelligence
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David Haertzen

Author and Instructor

Topic Objectives

Upon finishing this presentation you will:

- Understand what Customer Modeling is, its goals, and its components
- Know the top Customer Modeling terms
- Be able to select the right pattern to match the modeling problem
- Understand how to benefit from Customer Modeling
- Be able to discuss Customer Modeling methods and tools
- Be prepared to learn more about Customer Modeling

Audience and Prerequisites

Audience

- Customer Modeling Team Members
- Marketing Analysts
- Risk Analysts
- Data Architects and Modelers
- Database Administrators
- Business Experts
- Business Analysts
- Managers

Prerequisites

- Basic computer background
- Business background

Topic Structure

Module 1: Overview of Customer Model?

- Customer Related Decisions
- Customer Data Models
- Customer Analytical Models

Module 2: Segmenting the Customer

- Value and Behavior Segmentation
- Multi-dimensional Segmentation

Module 3: Modeling the Opportunity

- Customer Profitability Model
- Growing Best Customers
- Identifying Responsive Customers

Module 4: Modeling Risks and Costs

- Modeling Costs
- Modeling Risks

Module 5: Modeling Networks of Customers

- Enterprise Networks
- Social Media Networks (B2C)
- Trading Networks (B2B)

MODEL YOUR CUSTOMER

Topic I:

Overview of Customer Modeling

I. Overview of Customer Modeling

- Who are we talking about?
- Customer Related Decisions
- Types of Customer Models
- Customer Data Models
- Customer Analytical Models

Who is modeling customers?

Capital One became a top 5 bank using analytics.

Obama 2012

President Obama's analytics team developed voter "persuadability" scores that indicate how likely a voter can be convinced to change their vote based on campaign messages.

The Royal Shakespeare Company increased the number of regulars by 70%.

3M is saving $10 million in maintenance and has boosted sales force productivity 10%.

AIG failures in the use of analytics, including assumptions about the valuation and risk of loans result in losses that shake the nation.

Who are customers?

Parties:

- Individual
- Household
- Extended Family
- Social Group
- Segment
- Business
- Government
- Trust
- Labor Union
- Non-Profit Organization

Roles:

- Consumer
- Influencer
- Recommender
- Gate Keeper
- Approver
- Champion
- Decision Maker
- Distributor
- Employee
- Partner
- Prospect
- Patient
- Tax Payer
- Prisoner
- Voter

Predicting Who is Most Likely to …

Behave Well:

- Sell Successfully
- Buy a Product
- Buy a Premium Product
- Respond to a Treatment
- Respond to a Campaign
- Vote for a Candidate
- Finish College in 4 Years
- Stay Loyal for Years
- Drive Safely
- Recommend Product
- Use Self-Service

Behave Badly:

- Commit a Violent Crime
- Commit Fraud
- Switch to a Competitor
- Cancel an Order
- Drop Out from School
- Skip Bail
- Return a Product
- Quit a Job
- Make a Terrorist Attack
- Have an Automobile Accident
- Make Expensive Requests

Leads to Decisions

Behave Well:

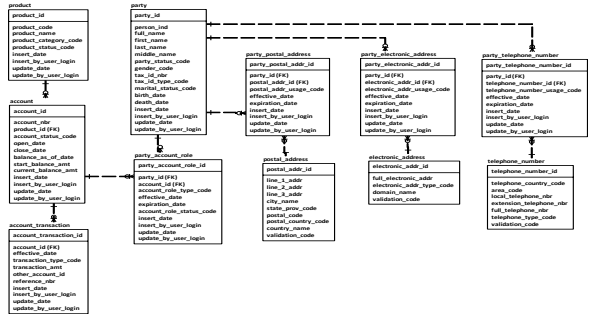
- Sell Successfully – Hire Sales Rep
- Buy a Product – Present Product
- Buy a Premium Product – Promote Up-sell
- Respond to a Treatment – Select Treatment
- Respond to a Campaign – Send email
- Vote for a Candidate – Contact to persuade
- Finish College in 4 Years – Accept student
- Stay Loyal for Years – Give Recognition
- Drive Safely – Offer auto insurance
- Recommend Product – Offer Free Sample
- Use Self-Service – Invest in Self-Service

Behave Badly:

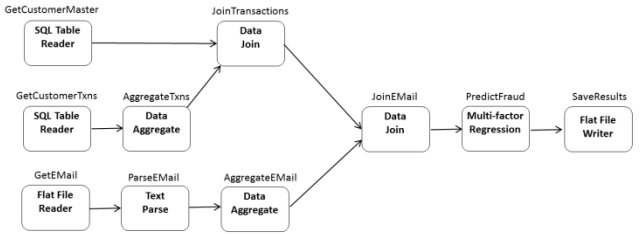
- Commit a Violent Crime – Offer Probation
- Commit Fraud – Investigate Red Flag
- Switch to a Competitor – Offer Lower Price
- Cancel an Order – Investigate Reasons
- Drop Out from School – Counsel Student
- Skip Bail – Set Bail Amount
- Return a Product – Charge Re-stocking Fee
- Quit a Job – Offer Transfer
- Behave Suspiciously – Report to Authorities
- Have an Automobile Accident – Raise Rates
- Make Expensive Requests – Charge Fees

Types of Customer Models

Data Models are representations, usually through graphical means, of facts, statistics, or items of information. Data models may be used to: understand data, communicate the structure of data and design data structures.



Analytical Models representations of reality coupled with algorithms that produce results such as: classifications, predictions, optimizations or recommendations.



Customer Data Models

Customer Data Models are representations, usually through graphical means, of facts, statistics, or items of information associated with customers. A customer is broadly described as a party (person or organization) who is of interest to the modeling enterprise.

Customer Data Model

Current Products owned
Products under consideration

Opinions, Values, Sentiments, Preferences,
Risk Tolerance, Motivations, Desires, Fears, Turn Offs

Geo Location (Country, state, city, zip),
District, Territory, Region
Telephone, Email
Restricted country
High Net Worth Area, High Crime Area

Service calls, web visits, IVR visits,
Store visits, abandoned cart,
Browsing patterns,
Response to advertising,
Response to offers

Social Media, Travel, Hobbies,
Driving Record, Reading Habits,
Voting Habits, Volunteer Activity,
Criminal Record, Address Changes

Purchases, Returns,
Payments, Deposits,
Withdrawals

Net worth, income,
Revenue, credit score.
Lifetime customer value (LCV),
Account Balances, Order Counts

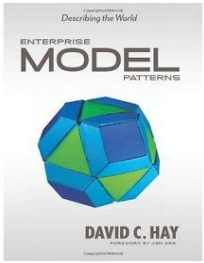
Name, Tax Id, Customer
Id, Watch List

Birthdate, Age, Gender,
Marital Status,
Education Level,
Ethnicity, Height,
Weight

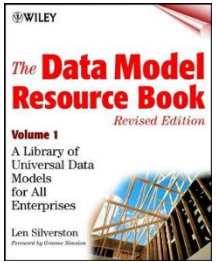
The “Party Data Model” Pattern

Party Data Model is an data model pattern which describes parties, a generalization for persons and organizations. This pattern has been described in books and is used in industry standard models and software products.

Books:



David C. Hay



Len Silverston

Industry Groups:

ACORD

ARTS
Association for Retail Technology Standards
of the National Retail Federation

Vendors:

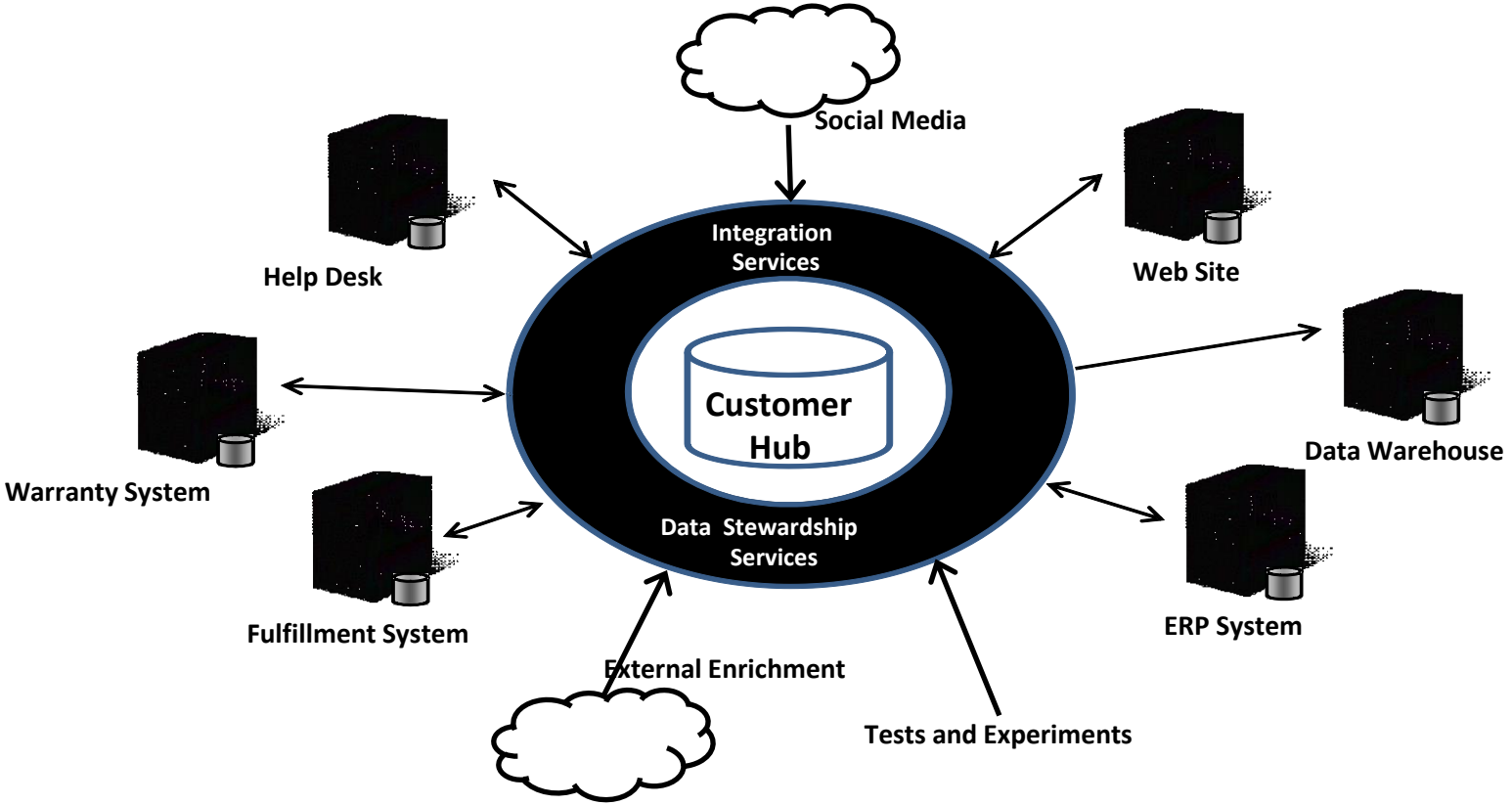
IBM

ORACLE

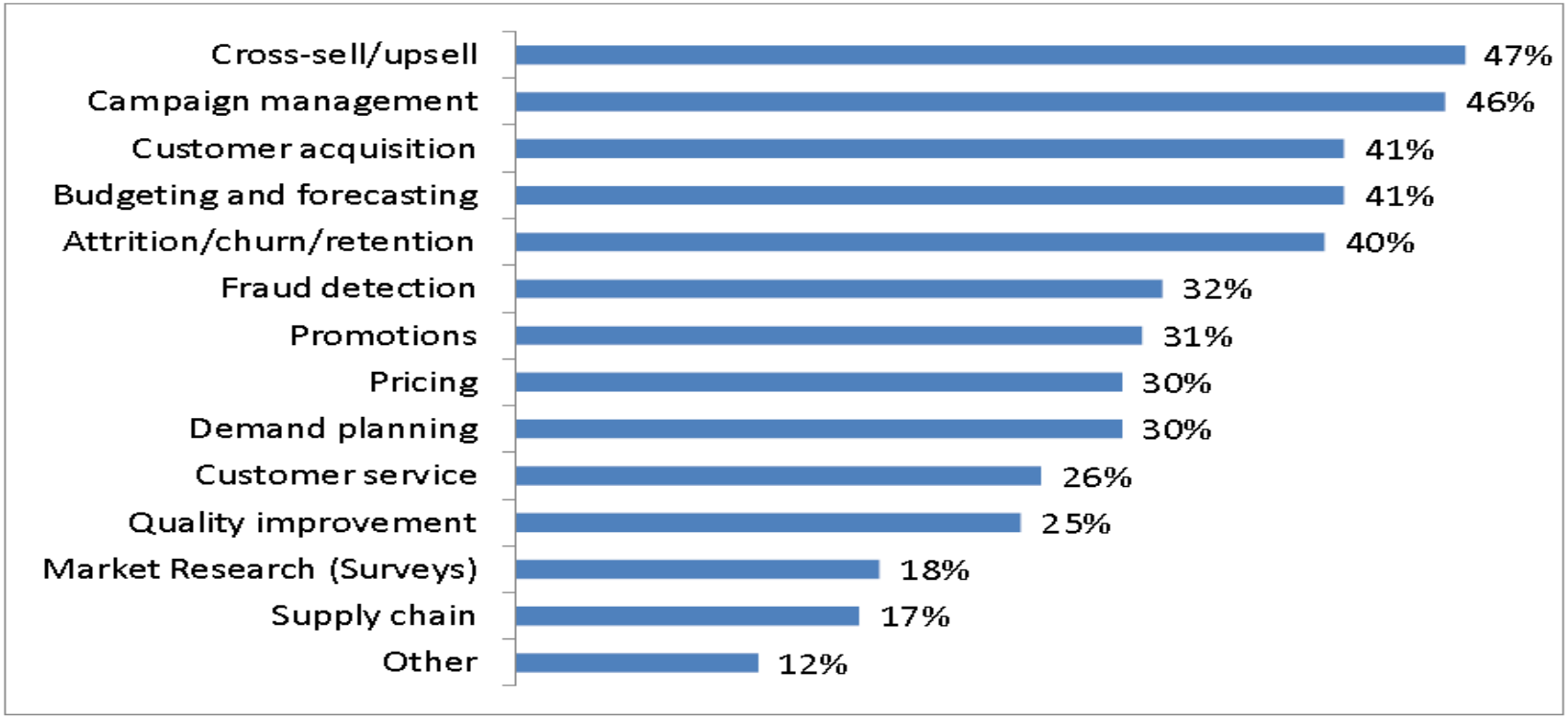
SAS

TERADATA

Customer Data Sources

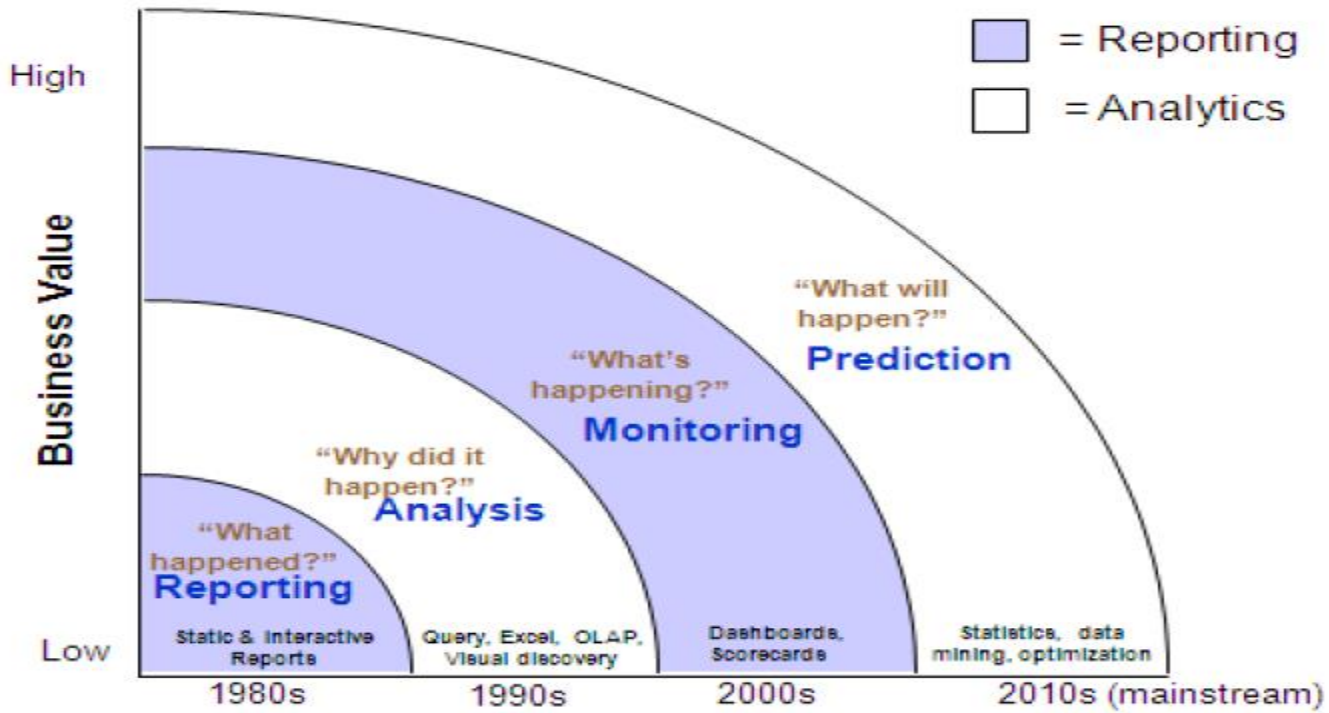


Customer Analytical Applications



From Wayne Eckerson, "Predictive Analytics: Extending the Value of Your Data Warehousing Investment," TDWI, 2007. Based on 166 respondents that had implemented predictive analytics.

Stages of Analytics



Wayne Eckerson - A Practical Guide to Analytics - EBook

Customer Analytical Model Examples

Model Type	Description
Acquisition Model	A model that predicts the probability that a prospect will buy the company's products or services.
Cross-sell Model	A model that predicts the probability that an existing customer will buy additional products or services of a different type than currently bought. Goods are at the same level.
Up-sell Model	A model that predicts the probability that an existing customer will buy an upgraded product or service.
Attrition Model	A model that predicts the probability that an existing customer will stop purchasing the company's products or services. This also known as a churn model.
Value Model	A model that predicts a numeric value such as customer lifetime value (CLV) or value resulting from the sale of a specific product to a customer.
Tone-Of-Voice Model	A model that identifies the most effective message for each targeted customer.
Risk Model	A model that predicts potential negative activities by customers such as: fraud, loan defaults, or excess service costs.
Customer Segmentation Model	A model that assigns customers to groups with similar characteristics.
Recommendation Engine	A model that provides advice on a near real-time basis – such as advice about offers that should be made to a customer or additional products to show to a customer.
Look-alike Modeling	A model where the target-marketed group (e.g. for a marketing campaign, product offering etc.) is an expanded list of parties whose profiles look like the selected party.

Customer Related Questions / Decisions

What products should be offered?
What products should be developed?

What tone of voice should be used to sell our products?
Who can be persuaded to buy our products?

Where should we locate new stores?
Where should we locate service centers?

What advertising campaigns should be run?
Which customers should be targeted for an email campaign?
What customer interaction services should be offered?

What behavior patterns should we target for marketing campaigns?
What behavior patterns should we target for risk investigation?

What patterns of transactions are high risk?
What patterns of transactions are high cost?

What is the investment profile of our most profitable customers?
Should credit score be a factor when determining insurance rates?

How should we recognize distinct customers?

What demographics should we pursue?

MODEL YOUR CUSTOMER

Topic II:
Segmenting the Customer

II. Segmenting Customers

- Segmentation Concepts
- Value Segmentation
- Behavior Segmentation
- Multi-dimensional Segmentation
- Clustering

Segmentation Concepts

Customer Segmentation Model a model that assigns customers to distinct groups with similar characteristics. The criteria used to segment customers can include multiple dimensions such as value, psychographics and behavior patterns.

Select segmentation criteria based on the business objectives.

Uses of Customer Segmentation

Resource Strategies

Enable strategic allocation of resources to the customer segments that will provide the highest ROI.

Focus Marketing Campaigns

Modify marketing campaigns to reach the right customer with the right offer at the right time, through the right channel.

Increase Retention

Identify customers in high attrition segments and take proactive steps to retain customers.

Guide Customer Strategies

Focus customer strategies to address the opportunities and risks of each customer segment.

Guide Product Strategies

Focus product development strategies to address the needs of each customer segment.

Cross Sell and Up Sell

Identify groups of customers who are likely to respond to cross sell and up sell offers.

Revenue Planning

Support financial budgeting and planning.

Reduce Service Cost

Identify customers who are likely to use lower cost customer service options such as web self service.

Mitigate Risks

Identify groups of customers who are likely to be engaging in harmful behavior such as fraudulent activity.

Value Segmentation

Value Segmentation groups customers based on quantitative metrics such as Customer Lifetime Value (CLV). Values may be produced through analytical models. For example, CLV may be determined as the sum of projected revenues minus the sum of projected expenses discounted by a specified interest rate. A discrete number of segments are used.

Example basis:

- Customer Lifetime Value (CLV)
- Assets Under Management
- Year to Date Revenue
- Rolling 12 Month Purchases

Customer Lifetime Value

- 1 = under $10,000
- 2 = $10,000 to $99,999
- 3 = $100,000 to $499,999
- 4 = $500,000 to $1,000,000
- 5 = over $1,000,000

Behavior Segmentation

Behavior Segmentation groups customers based on what they do rather than who they are. This encompasses: behaviors, interactions, location changes, transactions and products.

Example basis:

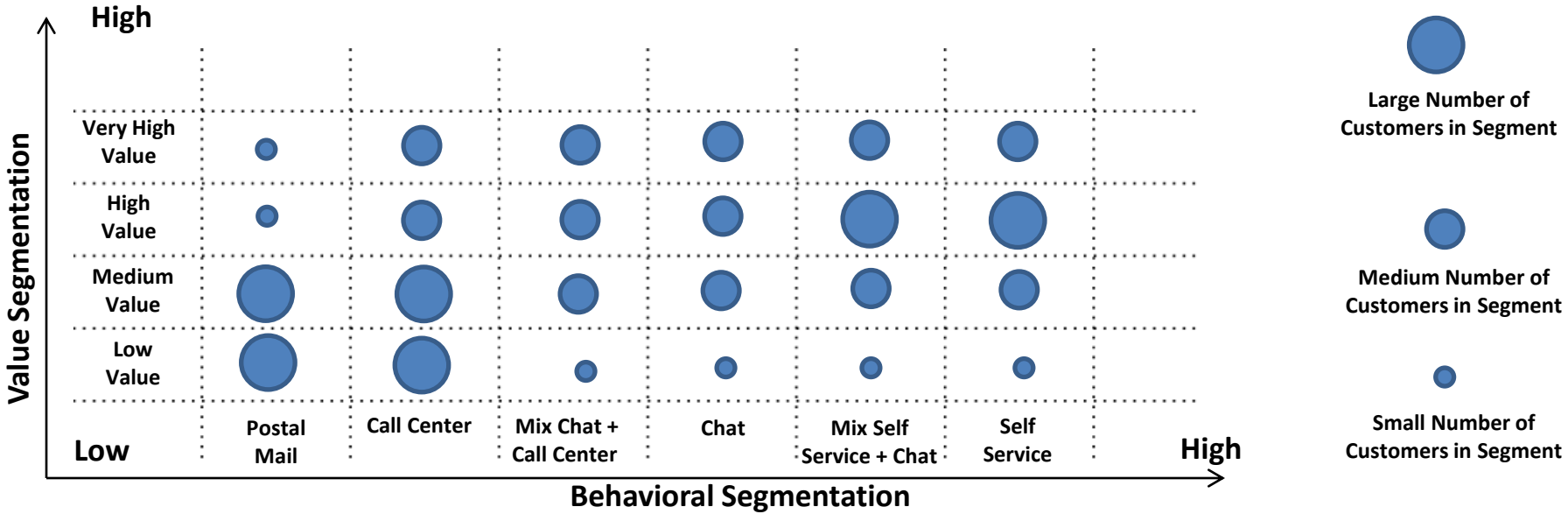
- Frequent Interaction Channel
- Home Address Volatility
- Wellness Activity Level

Home Address Volatility Value (5 year period):

- 1 = No Address Changes
- 2 = 1 Address Changes
- 3 = 2 to 3 Address Changes
- 4 = 4 to 6 Address Changes
- 5 = Over 6 Address Changes

Multidimensional Segmentation

Multidimensional Segmentation groups customers based on multiple factors called dimensions. Two dimensions can be expressed as a flat diagram while three dimensions can be expressed as a cube.



RFM Segmentation Example

Recency Frequency Monetary

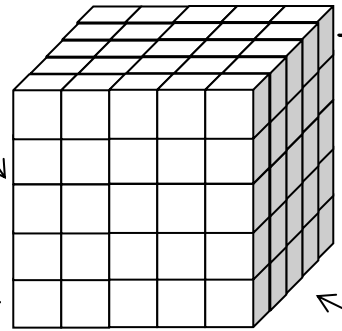
3 Dimensions

Quintile ranking (5 groups each)

125 Segments

Recency – purchased within:

1 = purchased over 2 years ago
2 = 1 to 2 years ago
3 = 4 to 12 months ago
4 = 2 to 3 months ago
5 = within current month



Segment 5-5-5
Highest Rank Customer
Purchased Within Current Month
Over 10 times
For over $1,000,000

Cell 1-1-1
Lowest Rank Customer
Purchased over 2 years ago
One time
For under $10,000

Monetary Value:

1 = under $10,000
2 = $10,000 to $99,999
3 = $100,000 to $499,999
4 = $500,000 to $1,000,000
5 = over $1,000,000

Frequency – purchase count:

1 = 1
2 = 2
3 = 3 to 5
4 = 6 to 10
5 = Over 10

Presidential Election Fund Raising

Which criteria were used???

- Do not call preference … 2
- Political preference … 3
- Battle Ground State … 3
- Voting Behavior … 3
- Income Level … 5
- Age … 5
- Gender … 2
- Ethnicity … 5
- Education Level … 3
- Donation Level … 5
- Combinations (multiply) = 202,500

INSIDE THE CAVE: Obama's Digital Campaign

10,000 segments tested during the campaign

Published by engage Research

Do not call preference
Political Preference: (3 bands)

Battle Ground State (3 levels)
Residence County

Voting Behavior (3 levels)

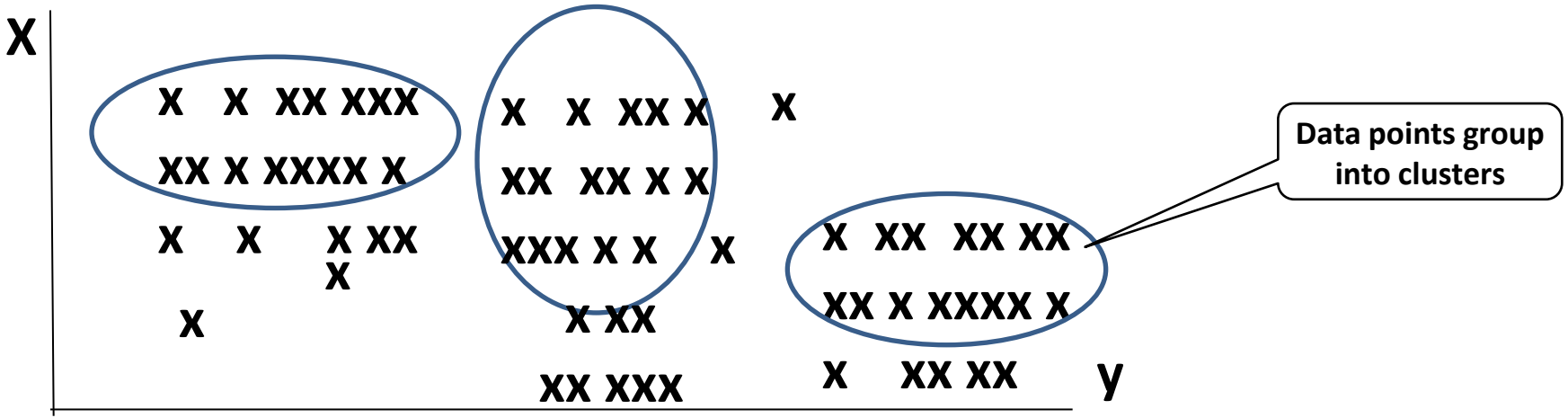
Income Level (5 levels)
Net worth

Age (5 bands)
Gender (2 bands)
Ethnicity (5 bands)
Education Level (3 bands)

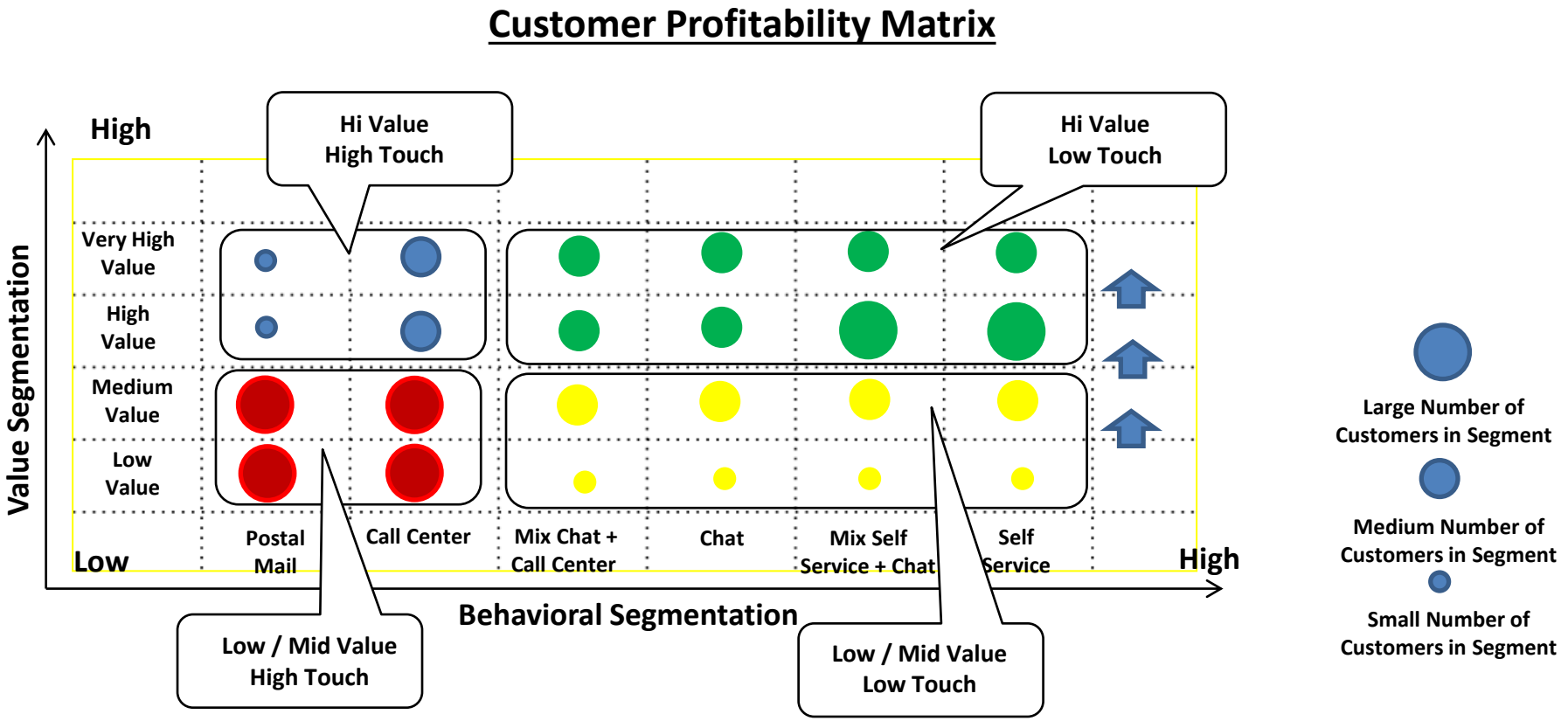
Donation Count / Amount (5 bands)

Cluster Analysis

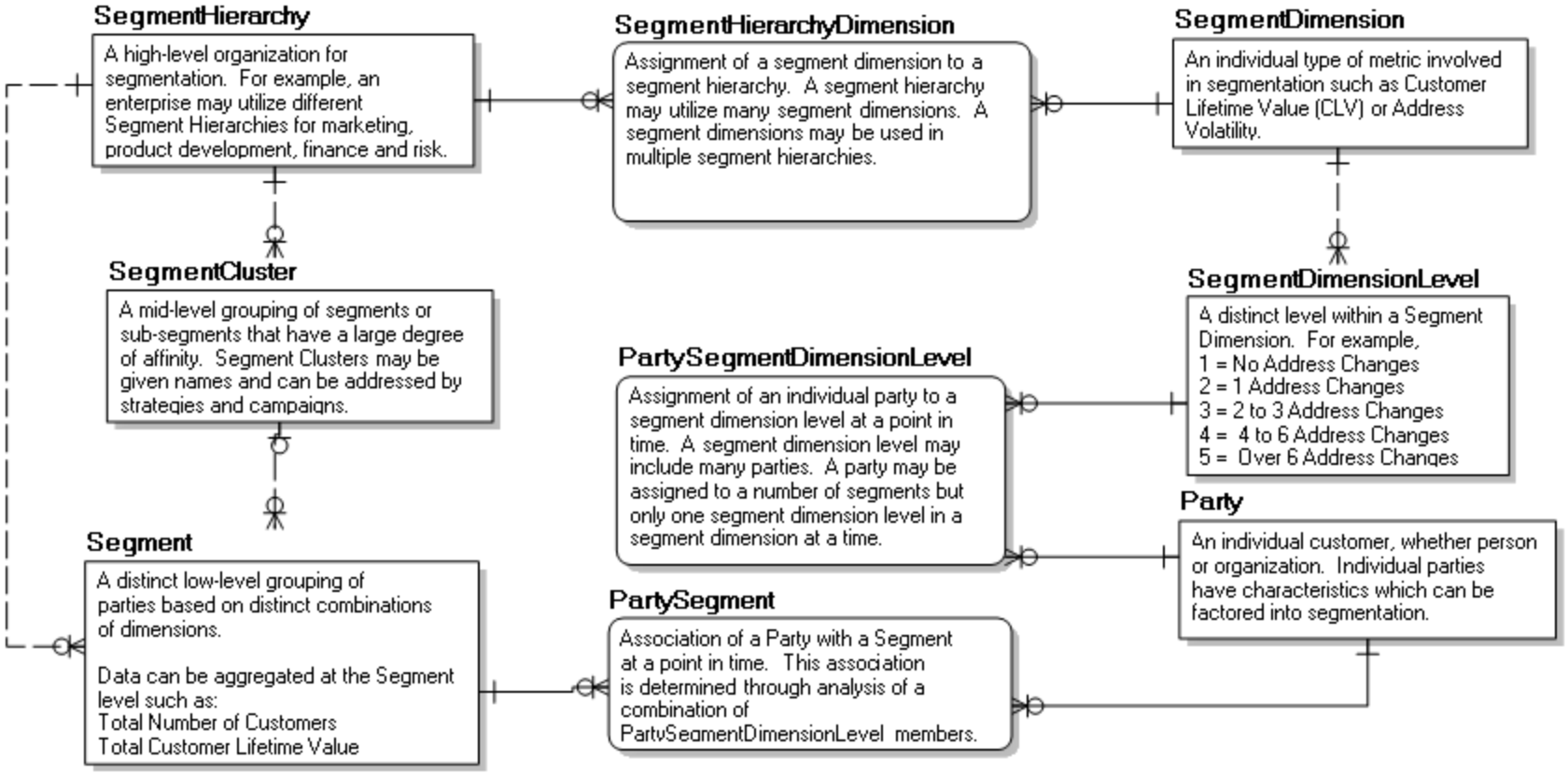
Cluster Analysis is an analytic method based on grouping data points with a large degree of affinity. The data points have much in common with data points in the cluster and differ from data points in other clusters. Segments can be clustered for manageability and understanding.



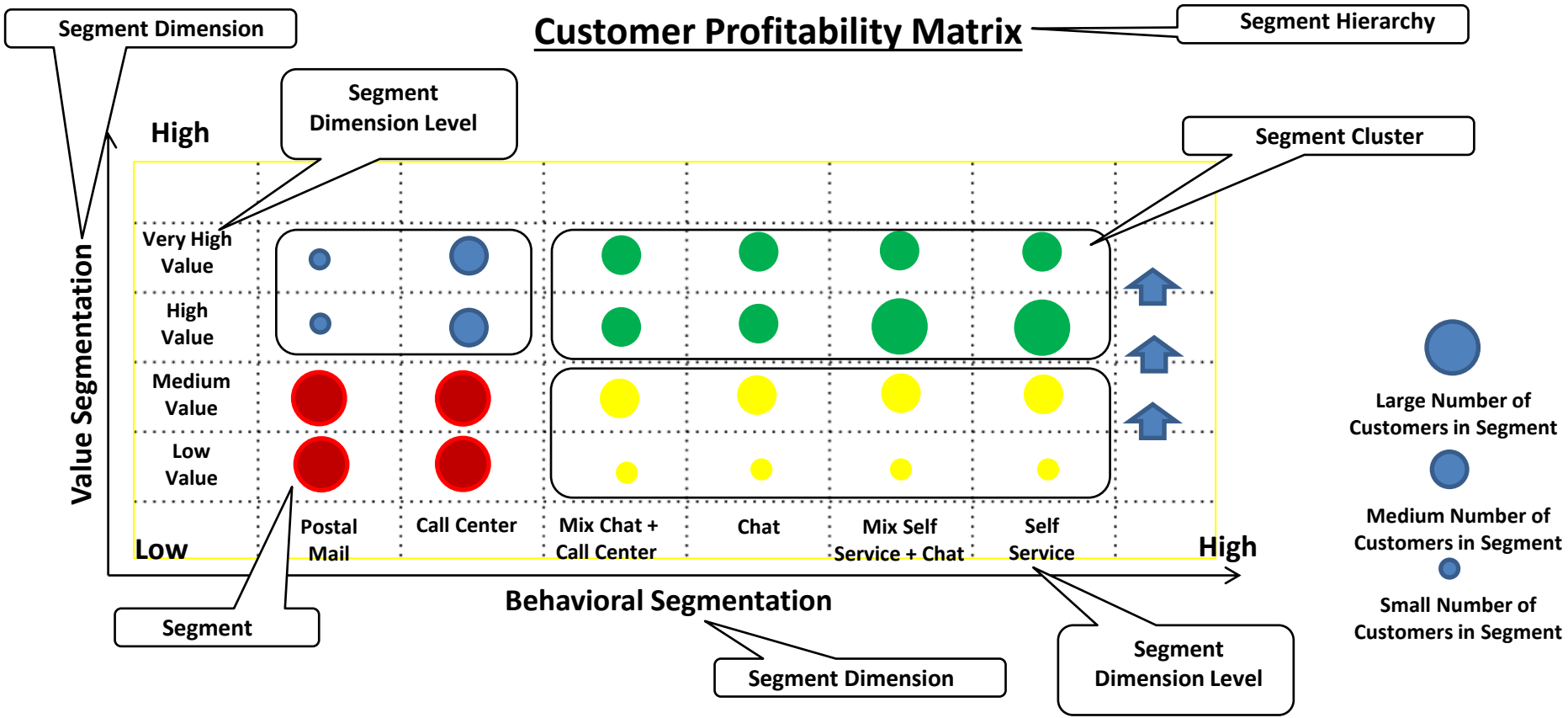
Clustering the Segments



Segmentation Hierarchies



Mapping to Data Model



Customer Data Providers

- 70 Named Customer Segment Clusters
- Products: InfoBase®, Firmographics® and PersonicX®
- Data available for most US individuals and households

- 65 Named Customer Segment Clusters
- Products: Tapestry®, numerous maps and mash ups

- 215+ Million Business Records
- DUNs Number
- Business information
- SIC and NAIC
- Credit ratings
- Ownership structure

- Demographics downloads
- Data available by zip code, county, metro area and state

MODEL YOUR CUSTOMER

Topic III:

Modeling the Opportunity

III. Modeling the Opportunity

- Customer Profitability Model
- Profile of the Profitable Customer
- Growing Best Customers
- Identifying Responsive Customers
- Using the Best Message

Customer Profitability Analysis

Customer Profitability Analysis is an analytic approach that determines the profitability of individual customers or segments of customers by identifying revenue and cost patterns associated with those customers. This includes identifying the most profitable customers (angels) as well as unprofitable customers (devils).

- Customer behavior and profitability identified by analysis of company databases
- 20% of customers are angels and result in bulk of profit
- 20% of customers are devils and reduce profits by 20%
- Profiles built of profitable and unprofitable customers
- Attracts most profitable customers by promotions, stocking desired products and providing best service
- Avoids unprofitable customers by dropping them from promotion lists, stopping loss-leader promotions and charging fees for re-stocking

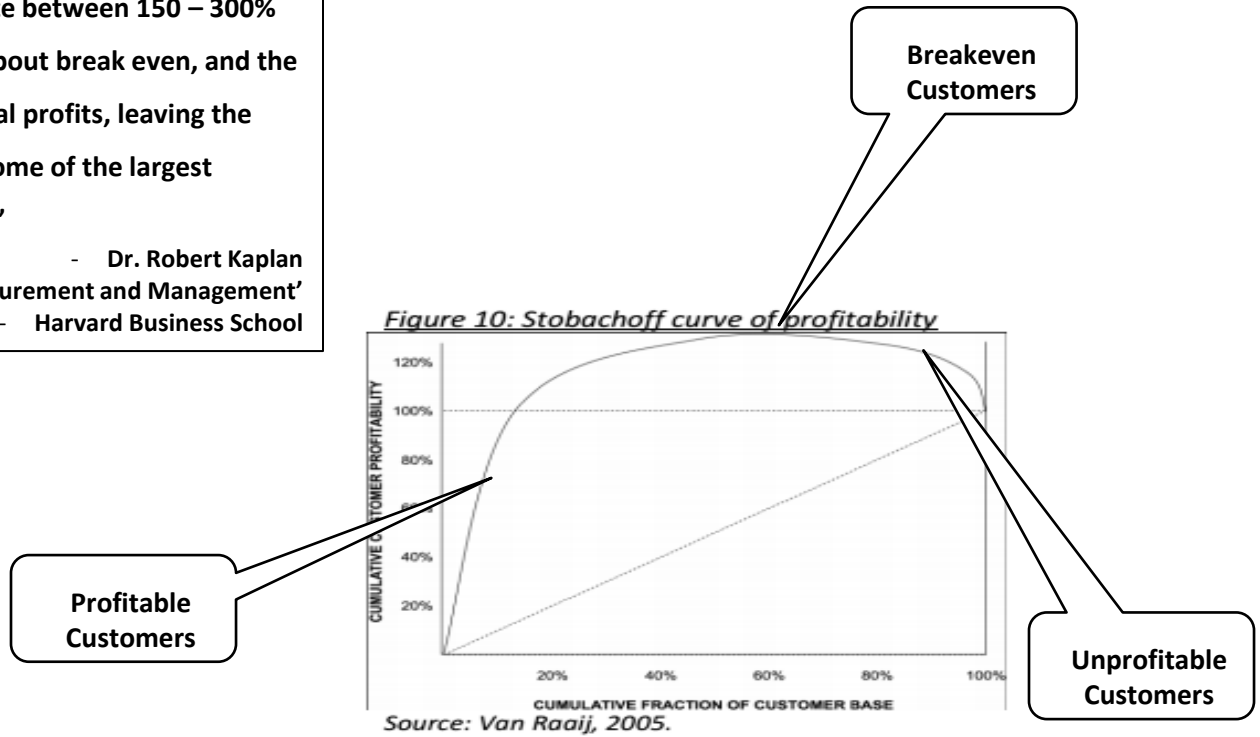
Best Buy Decides Not All Are Welcome – Wall Street Journal - 2004

Watch out for the “Whale Curve”

.. The most profitable 20% of customers generate between 150 – 300% of total profits. The middle 70% of customers about break even, and the least profitable customers lose 50 – 200% of total profits, leaving the company with its 100% of total profits. Often some of the largest customers turnout to be the most unprofitable.”

- **Dr. Robert Kaplan**
- **“Customer Profitability Measurement and Management’**
- **Harvard Business School**

Figure 10: Stobachoff curve of profitability



Source: Van Raaij, 2005.

Customer Profitability Measurement and Management – Dr. Robert Kaplan – Harvard Business School
Consumer Behavior – W. Fred Van Raaij
The Analytical Puzzle – Profitable Data Warehousing, Business Intelligence and Analytics – David Haertzen

Customer Lifetime Value (CLV)

Customer Lifetime Value is the expected present value of a customer calculated by summing the future value of revenues and subtracts the future value of costs such as: acquisition cost, cost of goods sold and Cost to Serve (CTS).

- **Use Time-Driven Activity-Based Costing (TDABC) to determine relevant costs.**

Profitable Customer Characteristics

Orders Standard Products
Orders Standard Handling

Makes short service calls
Orders via web or ecommerce
Rarely returns goods

Pays on time
Pays in full

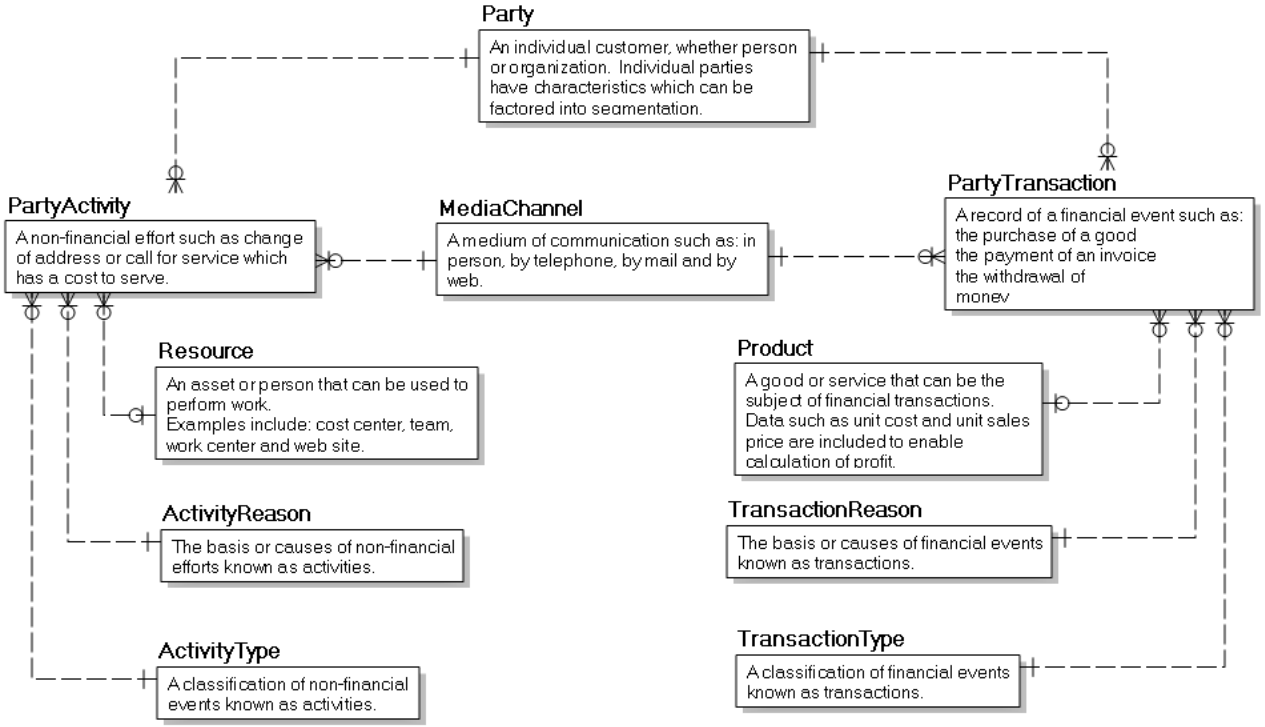
Lives in top 100 Most
Wealthy US Zip Code

Praises company on Social Media
Travels frequently

Orders Large Volume
Net worth > $1 million

Discover these characteristics by segmenting and examining average CLV.

CPA Data Model

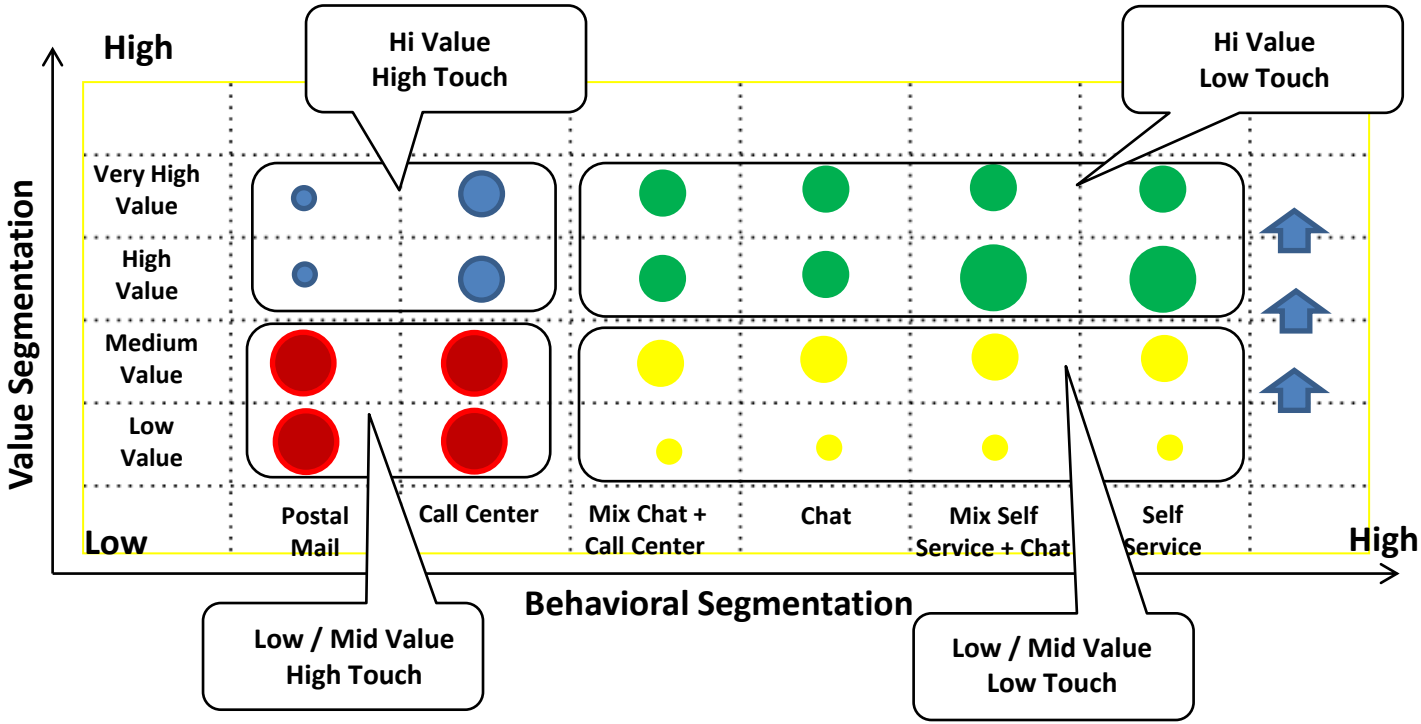


Use predictive analytics to find patterns.

Link customers to segments and compare characteristics.

Growing Profitable Customers

Customer Profitability Matrix



Large Number of Customers in Segment

Medium Number of Customers in Segment

Small Number of Customers in Segment

Growing New Best Customers

Start with low profit customers and grow to high value customers by researching patterns of customers moving from less profitable to more profitable segments. Provide good service and promote customer engagement.

Today: **College Student or Recent Grad**

Segment = Low Value / Chat

Tomorrow: **Profitable Customer**

Segment = High Value / Chat

Bank strategy – grow with up and comers who will establish high net worth households.

Freemium Strategy – start with free service and grow premium clients. Foot in door.

Identifying Responsive Customers

An improvement in sales response can have a major impact on profit.

Use predictive analytics to find patterns.

Use testing to determine best messages.

Without Predictive Analytics	
Customer Sale Percent	2.00%
Cost Per Mailing Piece	$1
Mail Count	100,000
Mailing Cost	$100,000
Unit Sale Price	$100
Gross Margin Per Sale	$80
Est Sales Units	2,000
COGS	$40,000
Gross Margin Total	$160,000
Profit after Mailing Cost	$60,000

Improving Customer Response Percentage by 7% improves profit by 417%

With Predictive Analytics	
Customer Sale Percent	9.00%
Cost Per Mailing Piece	$1
Mail Count	50,000
Mailing Cost	$50,000
Unit Sale Price	$100
Gross Margin Per Sale	$80
Est Sales Units	4,500
COGS	$90,000
Gross Margin Total	$360,000
Profit after Mailing Cost	$310,000

Using the Best Message: Obama 2012

THE SUBJECT LINE The team tested numerous subject lines by sending fundraising e-mails to small groups of supporters	THE HAUL Based on the donations those e-mails raised, the team projected how much the pitches would bring in if sent to the full Obama list	THE DIFFERENCE They then projected how much less money the campaign would collect if they used anything other than the most successful e-mail
I will be outspent THE WINNER!	$2,540,866	n/a
Some scary numbers	$1,941,379	$599,487
If you believe in what we're doing...	$911,806	$1,629,060
Last call: Join Michelle and me	$894,644	$1,646,222
Would love to meet you	$755,425	$1,785,441
Do this for Michelle	$714,147	$1,826,719
Change	$711,543	$1,829,323
The most popular Obama	$659,554	$1,881,312
Michelle time	$604,813	$1,936,053
Deadline: Join Michelle and me	$604,517	$1,936,349
Thankful every day	$545,486	$1,995,380
The one thing the polls got right...	$403,603	$2,137,263

Subject: I will be outspent

The winning subject line wound up beating the projections: it raised $2,673,278

One Day Inside a Fundraising Machine

Before firing off a fundraising plea to Obama's tens of millions of supporters, the campaign would experiment with different versions of a single message to see what got the most clicks. A snapshot of the e-mail team's work on June 26

Test

Test

Test

Bloomberg Business Week: The Science Behind Those Obama Campaign E-Mails
http://www.businessweek.com/articles/2012-11-29/the-science-behind-those-obama-campaign-e-mails

MODEL YOUR CUSTOMER

Topic IV:
Modeling Costs and Risks

IV. Modeling Costs and Risks

- Modeling Costs
- Modeling Risks

Predicting Who is Most Like to …

Behave Well:

- Sell Successfully
- Buy a Product
- Buy a Premium Product
- Respond to a Treatment
- Respond to a Campaign
- Achieve High Grades
- Finish College in 4 Years
- Stay Loyal for Years
- Drive Safely
- Recommend Product
- Use Self-Service

Behave Badly:

- Commit a Violent Crime
- Commit Fraud
- Switch to a Competitor
- Cancel an Order
- Drop Out from School
- Skip Bail
- Return a Product
- Quit a Job
- Make a Terrorist Attack
- Have an Automobile Accident
- Make Expensive Requests

Profile of the Unprofitable Customer

Orders Customized Products
Orders Special Handling

Values low price
Does not value loyalty

Makes lengthy service calls
Orders via call center
Frequently returns goods

Lives in high density developments

Pays on late
Pays in part

Trashes company on Social Media
Searches for bargains and coupons

Orders Low Volume
Net worth < $10 thousand

Age: 20 – 35
High School Educated

Customer Identifiers
Psychographics
Locations
Behaviors
Measures
Demographics
Firmographics
Transactions
Interactions
Products

This is an example – Each business unit must identify its own customer profiles.

Cost To Serve

Cost To Serve requires that each customer touch point be recorded, cost calculated and summed.

Call to Service Center:

For each call:

- **Start Time = 12/20/2013 10:00AM**
- **End Time = 12/30/2013 10:25AM**
- **Call Length = 25 Minutes**
- **Service Hourly Rate = $2.00/Minute**
- **Call Cost To Serve = $50.00**

Sum the cost of all Service Center calls

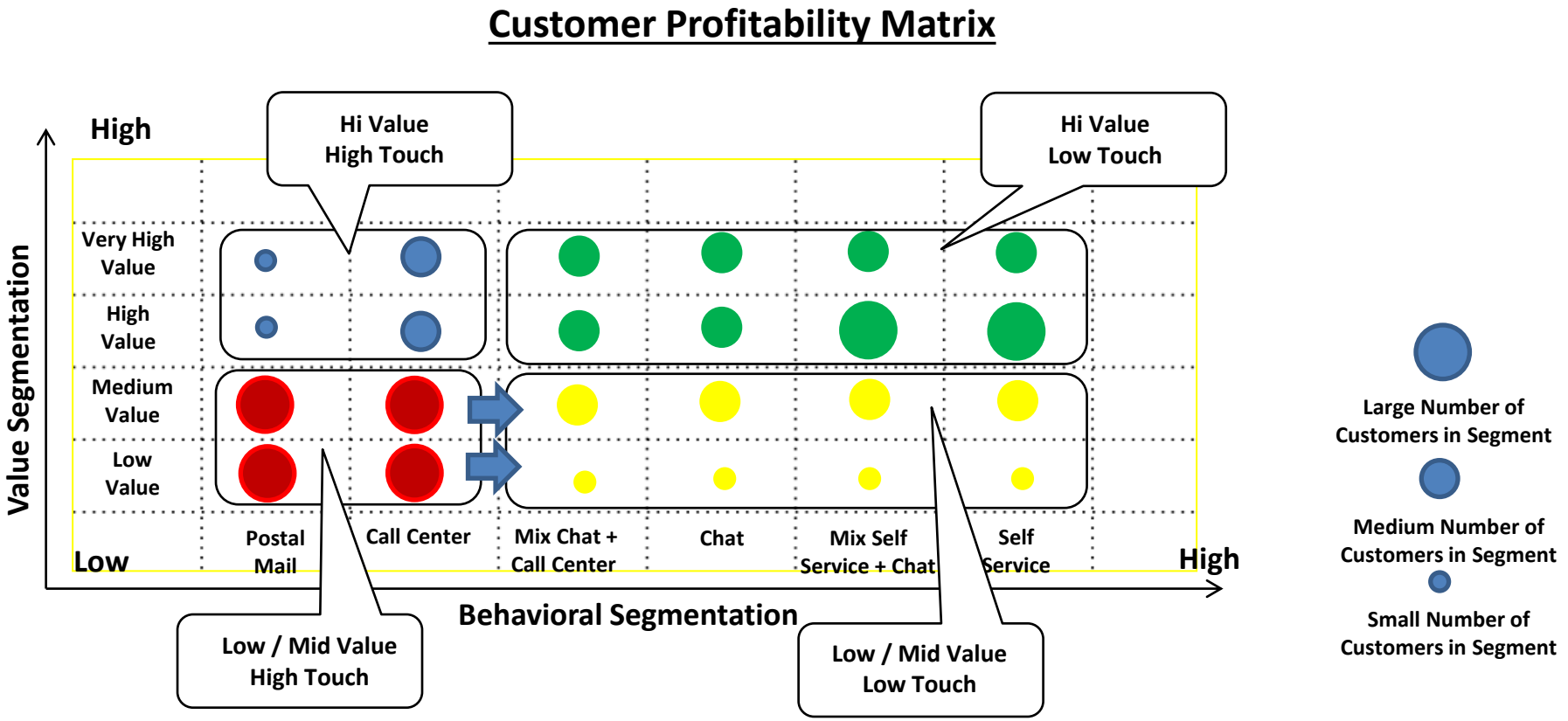
Access of Website:

For each access:

- **Start Time = 12/20/2013 10:00AM**
- **End Time = 12/30/2013 10:10AM**
- **Access Length = 10 Minutes**
- **Web Hourly Rate = $0.01/Minute**
- **Call Cost To Serve = $0.10**

Sum the cost of all Web access

Move to Lower Cost



Risks

Risk management requires tracking customer data and using analytics to identify and anticipate issues.

Loss of Profit:

- Switch to a Competitor
- Cancel an Order
- Drop Out from School
- Return a Product
- Quit a Job
- Have an Automobile Accident
- Make Expensive Requests

Criminals:

- Commit a Violent Crime
- Commit Bribery
- Commit Fraud
- Embezzle Funds
- File Improper Insurance Claims
- Hackers Steal Private Information
- Improperly Invoice for Goods or Services
- Launder Money
- Make a Terrorist Attack
- Skip Bail
- Stranger Owned Life Insurance (STOLI)
- Stranger Owned Annuities (STOA)

Risk – Red Flag Models

Red Flag Models identify conditions that may indicate fraud or other undesirable activity. Many are known to Fraud Investigators.

- Address is post office box
- Credit card charge outside of usual locations
- Digit distribution breaks Benford's Law
- Disbursements just under approval limit
- Dormant account is suddenly active
- Duplicate vendor invoice numbers
- Gaps in check numbers
- Line items do not match control totals
- Loans without repayments
- Numbers are outliers beyond standard deviation
- Parties with same tax id but different name
- Parties without postal address or telephone
- Party grouping often exchanges excess funds
- Party name is on watch list
- Payments to agents rather than policy holder
- Postal address changed frequently
- Postal address is on hot list
- Postal Address shared by unrelated parties
- Postal Addresses matches Employee Postal Address
- Tax id number is on death list
- Transactions are duplicated
- Unrelated parties share direct deposit account
- Unrelated parties share postal address
- Unrelated parties with same address
- Payee information matches employee information
- Vendor sequential vendor invoice

Third Party Anti-Risk Resources

Office of Foreign Assets Control (OFAC)

- SDN List – Specially Designated Nationals
- Government Sanctions Lists

- Credit Score Analysis
- Triad Customer Manager

Dun and Bradstreet

- 215+ Million Business Records
- DUNs Number
- Firmographics, SIC and NAIC
- Credit ratings
- Ownership structure

Association of Certified Fraud Examiners

- Education materials
- Check lists
- Certification
- Sample documents

MODEL YOUR CUSTOMER

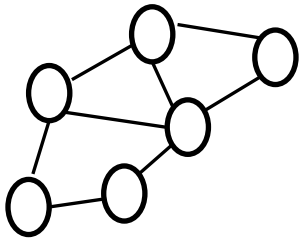
Topic V:
Networks of Customers

V. Networks of Customers

- Graph Theory
- Enterprise Networks
- Social Media Networks (B2C)
- Trading Networks (B2B)

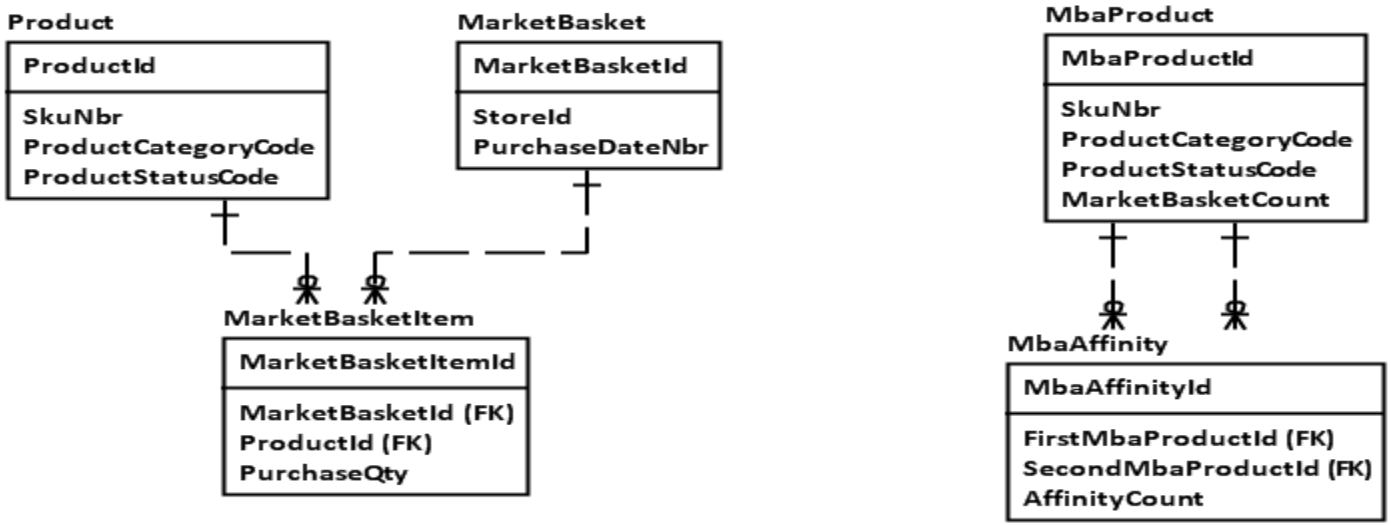
Graph Theory

Graphs are a models that represent relationships. This is a powerful approach that is useful for affinity analysis.



- **Node** – the entities in a graph that are related
- **Arc, Edge or Tie** – a relationship between nodes
- **Directed Graph** – a graph or diagram that has direction such the progress of time. The first node in each pair points to the second node.
- **Weighted Graph** – a graph where each edge has a quantified degree such as cost or affinity.

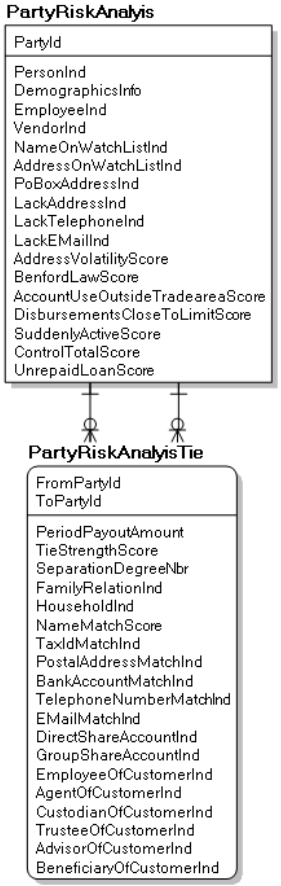
Affinity Models – Weighted Graph



Sales data is organized into market baskets

Group by product combination

Enterprise Network – Risk Example



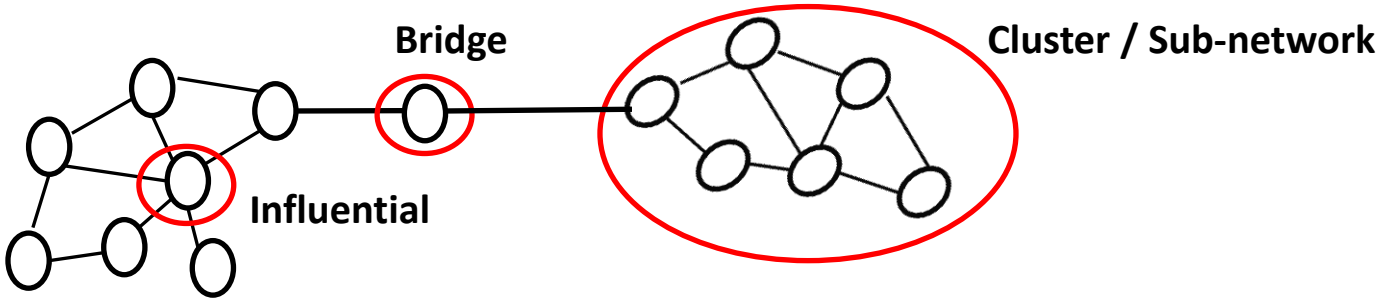
Enterprise Network Models represent parties and their ties that are the scope of an enterprise. This is represented by a node entities with links via tie entities. Examples of parties by role include: customer, employee, vendor, agent, consultant and trading partner.

PartyRiskAnalysis is a node representing a party to be analyzed for risk. It contains information specific to that entity such as roles it may play, situations that apply and various risk scores.

PartyRiskAnalysisTie is a edge (or arc) representing a relationship between parties being analyzed for risk. A tie exists between parties when they have something in common such as:

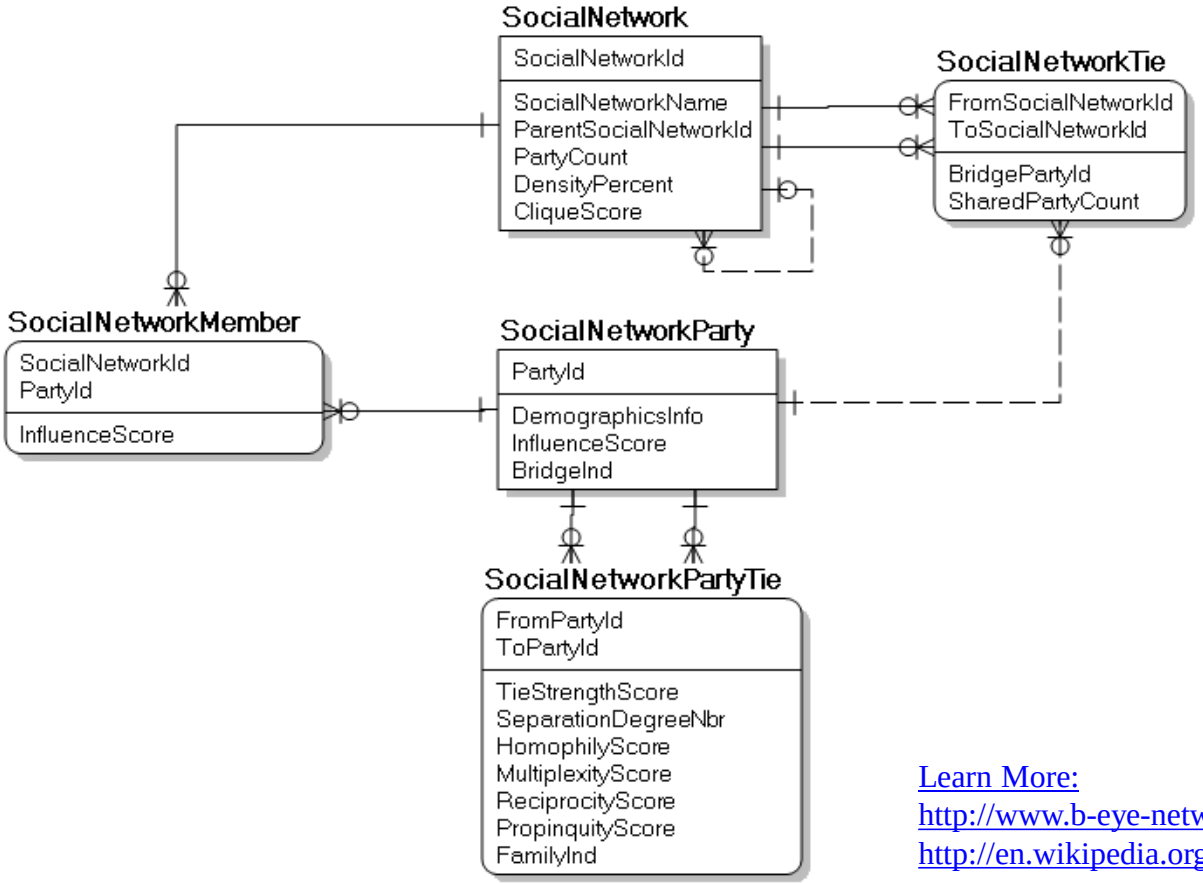
- Tax Id
- Association with an enterprise Account
- Postal Address, Telephone Number, Email Address
- Association with external Account
- Family or household Relationship
- Functional relationship such as: advisor, agent, custodian, employee or trustee

Social Network (B2C / C2C)



- **Bridge** An indication that party provides the only tie between **clusters**.
- **Influence** The degree that a party has the power to impact the opinions or actions of others.
- **Tie Strength** The degree of overall closeness between parties.
- **Homophily** The degree of similarity between parties based on characteristics such as: demographics, psychographics or behavior.
- **Multiplexity** The number of relationship roles between parties. People who are friends and who volunteer together have a multiplexity of 2.
- **Reciprocity** The degree that parties have a two way relationship.
- **Propinquity** A measure of the geographic closeness of parties.

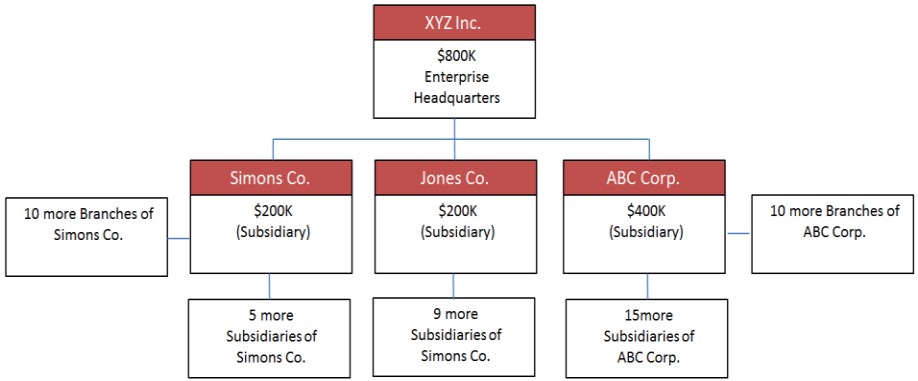
Social Network – Logical Data Model



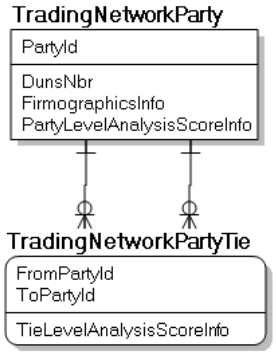
[Learn More:](http://www.b-eye-network.com/view/17079)
http://www.b-eye-network.com/view/17079
http://en.wikipedia.org/wiki/Social_network_analysis

Trading Networks (B2B)

Trading Network Models represent parties and their ties that are the scope of an enterprise. This is represented by a node entities with links via tie entities. Examples of trading nodes by role include: customer, employee, vendor, agent, consultant and trading partner.



Enterprise Ownership Hierarchies
Expressed as a Tree Structure



Enterprise Ownership Hierarchies
Expressed as Logical Data Model

Topic Review

Module 1: Overview of Customer Model?

- Customer Related Decisions
- Customer Data Models
- Customer Analytical Models

Module 2: Segmenting the Customer

- Value and Behavior Segmentation
- Multi-dimensional Segmentation

Module 3: Modeling the Opportunity

- Customer Profitability Model
- Growing Best Customers
- Identifying Responsive Customers

Module 4: Modeling Risks and Costs

- Modeling Costs
- Modeling Risks

Module 5: Modeling Networks of Customers

- Enterprise Networks
- Social Media Networks (B2C)
- Trading Networks (B2B)

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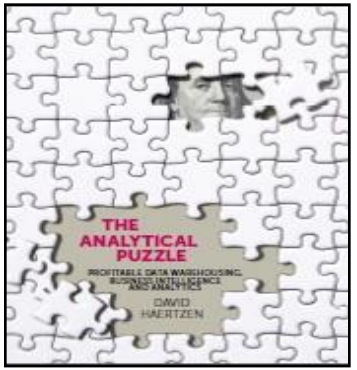

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