Drowning in Data. Starved for Knowledge

Marketing Solutions: Driven by Data, Powered by Strategy

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Introduction

Devani Sadh, Ph.D

- CEO and Founder: Data Square
- 17+ year track record of success stories in driving ROI for global and mid-sized B2C and B2B marketers
- Chair: DMA’s Analytics Council (spread thought leadership in analytics)
- Seminar Leader: DMA’s Database Marketing Seminar
- Invited Speaker (including Keynotes) at national conferences and events
- Judge for various Analytic Competitions
- Adjunct Faculty: At top tier universities including NYU and UCONN
- Program Committee Advisor: National Centre of Database Marketing (NCDM)
- Doctorate in Applied Statistics and Training in Database Design

About Data Square

Since 1999, Data Square has delivered highly successful award-winning “fusion” solutions in a wide range of verticals in B2B and B2C markets for global 1000 and mid-market clients such as IBM, Cisco, Kraft Foods, Sony, Elizabeth Arden, JP Morgan Chase, & Oppenheimer Funds.

Introduction and Strategy

Phase 1: Planning and Strategy

Benefits Analysis
Situational Analysis
Marketing Objectives
Strategy

- Database
- Decision Support

Marketing Programs
Testing, Monitor and Control
Introduction and Strategy

Benefits Analysis:

– The single most important benefit of data-driven marketing is the ability to target your marketing efforts, which means specific groups in your marketing database get specific messages that are relevant to them.

– A 5% uplift in customer retention can generate up to 70% growth in profitability – Bain Loyalty Effect.

– It costs five to ten times as much to recruit a new customer as it does to sell to an existing one.

Marketing Objectives:

– Identify your target customers

– Differentiate your customers by
  • their needs
  • their value to your company.

– Interact with your customers to form a learning relationship.

– Customize your
  • Messages and offers
  • Products and services

Database

Marketing Database

– A cleansed and integrated collection of customer and prospective customers including a minimum of contact, RFM and channel data. Additional elements include demographic data, customer preferences, shopping habits, web data, and promotion history.
**Database: Data Sources**

Web Data allows you to get a broader picture.

**Database: Data Sources**

Integrate Web Data with offline data.

**Database: Data Integration**

Integrate Web Data with offline data.

**Database: Data Marts**

Datamart

- A datamart is a database, or collection of databases, designed to help managers make strategic decisions about their business. Whereas a data warehouse combines databases across an entire enterprise, data marts are usually smaller and focus on a particular subject or department. Some data marts, called dependent data marts, are subsets of larger data warehouses.

- Datamarts also organize data in ways that queries and reports are faster and more efficient.

**Metrics and Measurement**

Metrics and Measurement

- Data Sources
  - Customer Data
  - Transactions

- Data Integration
  - Data Cleansing

- Database and Data Marts
  - Data Warehousing

- Applications
  - Customer Data Integration
  - Data Cleansing

- Contact Strategy
  - Direct Mail
  - eMail
  - Online
  - Social Media
  - Events
Metrics and Measurement: Strategy

Short Term
- 1. Customer Behavior - What they do now?
- 2. Marketing Campaign Performance

Medium Term
- 3. Segment Movement

Long Term
- 4. Lifetime Value

Key Process
- Development of Key Performance Indicators (KPI’s) based on campaign and business objectives.

Segment Movement
- Snapshots in time
- Measure changes in snapshot

Control Groups
- Make sure you take a control group

What should you measure?
- Developing KPI’s and the right metrics for your business is key

Interest
- Open rate
- Click-through rate
- Click to open rate

Delivery
- Conversion rate
- Active subscriber ratio
- Re-activation rate

Activity
- Unsubscribe rate
- Number of or percent spam complaints

Purchase
- Number of or percent cart abandonment
- Average order value
- Average dollars per email sent or delivered

Some KPI’s for Email Marketing
### Metrics and Measurement: Strategy

#### Standardizing Multi-channel Measures

<table>
<thead>
<tr>
<th>Media</th>
<th>Web</th>
<th>Print</th>
<th>E-mail</th>
<th>Direct Mail</th>
<th>Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors (unique)</td>
<td>Circulation</td>
<td>List</td>
<td>List</td>
<td>Inbound</td>
<td>Outbound</td>
</tr>
<tr>
<td>Date/Time</td>
<td>Length visit</td>
<td>Position/Size</td>
<td>Bounce</td>
<td>Return mail</td>
<td>Length of call</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audience</th>
<th>Page impressions</th>
<th>Cost</th>
<th>Open rate</th>
<th>Response rate</th>
<th>Info/Sign-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>Popular pages</td>
<td>Cost</td>
<td>Click through rate</td>
<td>Date/Time</td>
<td>Date/Time</td>
</tr>
<tr>
<td>Response No.</td>
<td>Referring sites</td>
<td>Response No.</td>
<td>Date/Time</td>
<td>Date/Time</td>
<td></td>
</tr>
</tbody>
</table>

### Metrics and Measurement: Strategy

#### Understanding and Using Measures

- **Sample Size**
  - Results based on small size are not accurate

- **Outliers**
  - Very extreme values can affect segments

- **Over ‘fitting’**
  - In conducting any analysis we are looking for good news therefore have a tendency to find good news

- **Misinterpretation**
  - Statistics can tell all kinds of stories. It is important to validate your conclusions

- **Not testing**
  - A discovery is only worthwhile once its been tested and found to offer an uplift over another approach

### Metrics and Measurement: Report Library

#### Key Standardized Reports in an Automated Fashion

- **2. MARKETS**
  - 1. SEGMENTS
  - 9. MERCHANDISING
  - 5. SALES POTENTIAL
  - 8. PRICE
  - 7. OUT OF STOCKS
  - 6. DISTRIBUTION

- **3. COMPETITION**
  - 4. NEW PRODUCTS

### Metrics and Measurement: OLAP Ad-Hoc Access

On-line Analytical Processing (OLAP) is enabled by software designed for manipulating multidimensional data. The software can create various views and representations of the data. OLAP software provides fast, consistent, interactive access to shared, multidimensional data.
Marketing dashboard is a collection of the most critical diagnostic and predictive metrics, organized to promote pattern recognition and performance.

Management information

Analytic intelligence

Actionable intelligence

How can we know things happen/improve?

Prediction

What will happen and why?

What is the likely outcome / impact?

Evaluation

What was the impact of an initiative?

Was the intended outcome achieved?

Performance Management

Why did it happen/not happen?

What factors contribute to outcomes?

Analysis/Interpretation

What does the change signify?

What trends are apparent?

Real-time reporting

What is happening?

What is changing?

Historical reporting

What happened?

What happened?

Time/technology

The Analytics Maturity Curve

Customer Level

The overarching goal of Data Mining is to analytically optimize the mix of tactics, audience, timing and frequency required for each consumer based on the product and customer lifecycle.

Tactic Level

Data Mining should also be used for budget allocation for media, objectives and different consumer lifecycle stages:

- It costs 5 times as much to acquire a customer as to service existing customers.
- Retention rates average about 65%
Data Mining: Objectives

The goal of Data Mining is to provide the inputs needed to make the right decisions...

The Right Decisions are the Key to Revenue Growth

Which Product?

Which Offer?

Data Mining: Top Applications

- Direct Marketing
- Customer Relationship Management
- Customer Retention
- Customer Acquisition
- Customer Growth / Up-sell
- Customer Lifetime Value
- Customer Cross-sell and Diversification
- Media Mix Optimization
- Channel Optimization
- Customer Attrition Prediction
- Offer Optimization
- Marketing Automation
- Fraud Detection
- Risk Assessment
- Collections Management
- Underwriting Management
- Sales Pipeline Forecasting
- Sales Force Automation
- Pricing Optimization
- Web Analytics
- Online Personalization
- Customer Service Management
- Contact Center Management
- Forecasting
  - Product, Portfolio, Division
  - Business, Market, Economy

Data Mining: Profiling

Customer profiling involves matching behavioral information such as response with additional data such as demographics (e.g., age, gender, income, presence of children, etc.), psychographics (e.g., likes cultural events, wine drinker, golfer, etc.) and other customer characteristics.

Profiles are useful when created with a reference point and an index. For example,
- Customers vs. available prospect universe
- Best customers vs. overall customer base

Example: Profile of Customers vs. US Businesses

- Which sales volume categories are likely to deliver above-average response rates in a prospect mailing?

Data Mining: Profiling

Example: Profile of Customers vs. US Businesses

- Businesses with sales volume of $500 billion or more have the highest relative incidence of customers.
Data Mining: RFM

A proven technique for waste elimination is an analysis of customers by recency, frequency, and monetary (RFM) values.

**Recency:** The number of days between the last purchase and the time of analysis; the smaller the number the higher the probability of next purchase.

**Frequency:** The number of purchases during a period of time; the higher the frequency the higher the loyalty of a consumer.

**Monetary:** Total amount of purchase during a period of time; the higher the amount the higher the contribution of a consumer.

Data Mining: RFM

**Recency:** Divide the sorted purchase dates into five equal intervals; then assign a weight 5 to the first 20 percent, 4 to the next 20%, and so forth.

**Frequency:** Divide the total purchase counts in an interval into five equal intervals.

**Monetary:** Divide the total purchase amounts in an interval into five equal intervals.

Data Mining: Segmentation

Segmentation is the division of an universe (e.g. market) into sub-groups (e.g. consumer segments) that share common needs or characteristics.

Data Mining: Segmentation

<table>
<thead>
<tr>
<th>Value-based Segments</th>
<th>Needs-based Segments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gold</strong></td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Silver</strong></td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>Large</td>
</tr>
<tr>
<td><strong>Bronze</strong></td>
<td>SMB</td>
</tr>
</tbody>
</table>

Segment Creation and Utilization Roadmap

- Segment Definition
- Segment Strategy Development
- Segment Analysis & Campaign Plan
- Implementation Action Plan

Segmentation based on:
- Behaviors
- Firmographics
- Psychographics (interests, attitudes, lifestyles)
- Needs
- Benefits
- Preferences
Data Mining: Segmentation

Segmentation Applications

- Developing specialized strategy by segment
  - Management of creative, media, and product
  - Evaluation of media and channel fit with segments
  - Product development and bundling
  - Geographic screening
  - Constructing market tests

Data Mining: Classification

Variables
- Age
- Gender
- Income
- Own / Rent
- Marital Status
- Years Member
- Other Services
- Children Present

Tenure:
- < 1 Yr
  - 19,300
  - 2.9% Response
- 1 Yr
  - 16,900
  - 2.1% Response
- 2+ Yrs
  - 63,800
  - 1.5% Response

Very Small
- 5,200
  - 2.1% Response

SMB
- 6,700
  - 2.5% Response

Large
- 3.8% Response

Branch
- 41,500
  - 0.9% Response

HQ
- 22,300
  - 2.8% Response

Sector: Services
- 7,300
  - 1.8% Response

Sector: Other
- 2.3% Response

Variables
- Age
- Gender
- Income
- Own / Rent
- Marital Status
- Years Member
- Other Services
- Children Present

Large businesses that are new customers are most responsive.

Data Mining: Predictive Modeling

Predictive Modeling can help identify 20% of the customers that will generate 80% of the future response or revenue.

Data Mining: Predictive Modeling

<table>
<thead>
<tr>
<th># of Customers</th>
<th>% of Customers</th>
<th>% of Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>50,000</td>
<td>5%</td>
<td>42%</td>
</tr>
<tr>
<td>150,000</td>
<td>15%</td>
<td>38%</td>
</tr>
<tr>
<td>200,000</td>
<td>20%</td>
<td>12%</td>
</tr>
<tr>
<td>400,000</td>
<td>40%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Data Mining: Predictive Modeling

Case Study: Customer Acquisition

- A tele-communications company was looking to acquire customers that looked most like "best customers".
- A Prospect "Best Customer" Model was built against a combination of lists using demographics and geo-demographics.
- The top 10% of prospects (Decile 1) showed a response rate of 2% (vs. the average rate of .3%) to an introductory direct mail promotion.
Predict single
behavior

Predict single
continuous ($) behavior

Predict 2+ behaviors & integrate

Optimize outcomes across categories

Optimize profit based on multiple dimensions

Profit maximizing Contract Strategy with actionable insight

Convert Rank
Response Rank
1
2
3
4
5
6
7
8
9
10

Highly Profitable

Highly Unprofitable

Data Mining: Associations

Association analysis is used to identify the behavior of specific events or processes. Associations link occurrences within a single event:
- E.g. Companies that purchase hardware are three times more likely to buy software than those who buy only services.

Sequences are similar to associations, but they link events over time and determine how items relate to each other over time:
- E.g. Businesses that buy Product A are four times more likely to buy a related accessory within six months.
- Marketers may offer a 10% discount on all related accessories within 3-4 months following their Product A purchase.

Optimal Database Marketing: Strategy, Development, and Data Mining (Hardcover) for Staples and Fidelity: Timing
- Cadence, Integration, Contact Strategy
- Tier I
- Tier II
- Tier III
- Tier IV

Staples and Fidelity: Timing
- Schwall and Wells Fargo: Trigger-based Marketing and Lifecycle messaging.

Data Mining: Lifetime Value

Why is Lifetime Value Important?
- Measuring current value alone could lead to different (sub-optimal) marketing decisions.
Data Mining: Lifetime Value

Why is Lifetime Value Important?
- Compared with low-CLV consumers, high-CLV consumers
  - Have higher tenure and retention rates
  - Buy more per year
  - Buy higher priced options
  - Buy more often
  - Are less price sensitive
  - Are less costly to serve
  - Are more loyal
  - Tend to be multi-channel buyers and more engaged

Data Mining: Lifetime Value

Consumer Lifetime Value is the net present value of a consumer’s future contributions to profit and overhead.

Data Mining: Lifetime Value Applications

Acquisition
- Invest to acquire a customer if expected NPV of future cash flows is equal to or greater than the acquisition costs
- Acquisition costs are sunk costs and irrelevant after the customer has been acquired

Retention
- The value of a customer can be raised by increasing the volume of purchases, the margin on purchases, or the period over which purchases are made
- Invest in customer development and retention until, at the margin, the increases in customer value attributable to changes in volume, margin and duration are equal to the costs of achieving them

Data Mining: Lifetime Value Applications

Retention Strategies Based on LTV

Increasing Lifetime Value
- Increase the retention rate
- Increase the referral rate
- Increase the spending rate
- Decrease the direct costs
- Decrease the marketing costs

One way to maximize LTV is to earn the loyalty of the most profitable consumers by giving them superior value.
Web Usage Mining Applications and Pattern Discovery Techniques

- Prediction of next event
- Sequence mining
- Markov chains
- Association rules
- Markov chains
- Clustering
- Session Clustering
- Classification
- Characterization of visitors with respect to a set of predefined classes
- Discovery of visitor groups with common properties & interests
- Discovery of visitor groups with common behaviour
- Discovery of associated events/application objects
- Card fraud detection

Agenda

- Introduction and Strategy
- Marketing Database
- Metrics and Measurement
- Data Mining
  - Campaigns and CRM

Campaigns

- Campaign Management
  - The process for organizations to develop and deploy multi-channel marketing campaigns to target groups or individuals and track the effect of those campaigns, by customer segment, over time. Enables you to:
    - Optimize your marketing spend
    - Improve the quality of the leads you generate
    - Measure campaign performance and effectiveness
    - Determine which marketing activities generate the most revenue
  - Requires Database Marketing expertise and incorporation of insights from the data mining phase into a tactical campaign plan.
Campaigns: Strategy

Develop an Overall Campaign Strategy for the Customer Lifecycle

Campaigns: Development

Identify Relevant Customer Lifecycle Events and Specific Campaigns

Campaigns: Database

Leverage Appropriate Data for Different Lifecycle Events

Campaigns: Analytics

Applying a Predictive Model

Single Contact Decision Table

<table>
<thead>
<tr>
<th>Model Segment</th>
<th>Prior $/K Revenue</th>
<th>Project $/K Revenue</th>
<th>Project $/K Cost</th>
<th>Project $/K Profit</th>
<th>Contact Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>($6,170)</td>
<td>($4,479)</td>
<td>($2,660)</td>
<td>($1,817)</td>
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<td>2</td>
<td>$3,320</td>
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<tr>
<td>3</td>
<td>$3,184</td>
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<td>$1,924</td>
<td>$529</td>
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<tr>
<td>4</td>
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<tr>
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<td>7</td>
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<td>$134</td>
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<td>10</td>
<td>$342</td>
<td>$359</td>
<td>$706</td>
<td>$147</td>
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</tr>
</tbody>
</table>

Campaigns: Analytics

Multi-Step Sales Segmentation and Targeting

Multi-step sales processes (e.g., insurance) involve multiple behaviors each of which can have an impact on profitability.
**Finding the best combination of contacts**

**Offline Channel**

How do you determine the effectiveness of your marketing campaigns?

- Create test plans for each recommendation
- Models available to calculate sizes for test and control groups
- Evaluate performance based on experimental design
- Actual lift versus predicted lift
- Champion models

**Test-Learn-Execute-Repeat**

- How do you determine the effectiveness of your marketing campaigns?

**Optimization by Contact Strategy**

Customer-centric (vs. campaign centric) optimized contact strategy with the highest profitability:

- Diminishing impact with added contacts
- Seasonal consumer based strategies are chosen to maximize profitability:
  - Finding the best combination of contacts
  - Within a time period

**Optimization based on predictive analytics is the wave of the future**

- Multi-channel users tend to be more loyal
- Marketing contacts often interact (“cannibalize”) when:
  - Same or similar product offerings
  - Small time interval between contacts

**Multi-channel contact often increases effectiveness**

**Campaigns: Analytics**

<table>
<thead>
<tr>
<th>Name</th>
<th>Predict Lift</th>
<th>Predict Convert</th>
<th>Predict Premium</th>
<th>Predict Lease</th>
<th>Predict Claims</th>
<th>Predict Claims Lift</th>
<th>Contact Profit</th>
<th>Contact Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.4%</td>
<td>33.6%</td>
<td>$ 932</td>
<td>14.2%</td>
<td>85.1%</td>
<td>$ (0.63)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.5%</td>
<td>34.2%</td>
<td>$ 1,563</td>
<td>12.4%</td>
<td>86.1%</td>
<td>$ 5.18</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>3</td>
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<td>28.4%</td>
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<td>13.1%</td>
<td>84.2%</td>
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<td></td>
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<tr>
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<td>2.8%</td>
<td>35.2%</td>
<td>$ 1,499</td>
<td>21.3%</td>
<td>97.2%</td>
<td>$ (9.23)</td>
<td>No</td>
<td></td>
</tr>
<tr>
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<td>2.7%</td>
<td>24.7%</td>
<td>$ 1,382</td>
<td>19.4%</td>
<td>82.4%</td>
<td>$ (2.35)</td>
<td>No</td>
<td></td>
</tr>
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<td>6</td>
<td>2.1%</td>
<td>29.8%</td>
<td>$ 1,498</td>
<td>23.8%</td>
<td>83.6%</td>
<td>$ (1.21)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>1.6%</td>
<td>32.7%</td>
<td>$ 1,195</td>
<td>14.2%</td>
<td>84.3%</td>
<td>$ (0.10)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**Multi-Step Decision Table**

**Optimization by Model and Contact Strategy**

Most profitable strategy for a segment has the highest value in the row

- Model Segment
- Aggression
- Frequent View
- Offline Only
- e-mail Only
- Light

**Campaigns: Best Practices**

**Multi-step Multi-Channel Lifetime Value and Relationship-based Contact Strategy**

Optimization based on predictive analytics is the wave of the future
Business Solutions:
Driven by Data, Powered by Strategy

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