28. Customer Segmentation

3 December 2008

Bob Glushko

Plan for ISSD Lecture #28

- Architectures for Personalization (from 12/1)
- Recommendation Systems (from 12/1)
- Motivating Customer Segmentation
- Segmentation Dimensions
- Segmentation Modeling
- Loyalty Programs
- CRM and CEM
Architectures for Personalization

Adomavicius & Tuzhilin describe three architectures for personalization. They contrast them topologically in terms of where the "personalization engine" is located in the service system. It is also helpful to contrast on the basis of which side of the provider-consumer relationship initiates and controls the personalization. Implications for privacy?
Item Recommendation

The most intuitive way to get an item recommendation is by "word of mouth" from people who have similar preferences.

There are numerous algorithms for identifying these "nearest neighbors" or "consumer clusters".

But it is more common to base recommendations on the similarity from the "item side" rather than the customer side.
User-User and Item-Item Filtering

User-User Collaborative Filtering

Principle: Find users with similar preferences and listen to their "word of mouth"

Bob and Kelly agree on Item B and C

So Bob's preference for A gets recommended to Kelly, and Kelly's recommendation for D gets recommended to Bob
Item-Item Collaborative Filtering

Principle: Find items with similar appeal

Item A and Item D are both preferred by Ben and Anno

So if people who like D also like A, then A can be recommended to Kelly, who likes D

Limitations on Collaborative Filtering

Privacy concerns
Recommendation "spam" and dishonest ratings
Variability and preference change
Lack of "context sensitivity"
Motivating Segmentation

ALL CUSTOMERS ARE NOT THE SAME

The relative costs of acquiring and keeping different groups of customers can differ a great deal

Even within the same demographic group, customers can differ substantially on "psychographic" dimensions

These differences determine which customers buy most often, contribute most to sales, and are most profitable (and these are probably not the same ones)

Some customers deserve more attention and service than others

You'd be better off if you got rid of some of your customers

Defining "Customer Segment"

Every business must decide "what market it is in" -- what products and services it offers, to whom they will be offered, in which geographic area, in what time frames, and which firms are its competitors

Once these strategic decisions are made, the business can refine "to whom it offers" its products and services into a set of customer or market segments

Each segment should define where some set of prospective customers "is coming from" using attributes that ideally explain why they would do so

Segments are the basis for strategies for acquiring customers, increasing market share, increasing "wallet share," retaining customers, and so on
Segmentation {and,or,vs} Personalization [1]

Businesses have targeted their products and services to different customer segments and engaged in "relationship marketing" as long as there have been businesses.

But industrialization and economies of scale introduced "middlemen" and required a more transactional approach to marketing that wasn't as connected to the customer.

Information about specific customers is required to personalize products and services, and for those that are mostly or entirely "offline" it is nearly impossible to obtain it.

Segmentation {and,or,vs} Personalization [2]

Systems and services can be personalized to the degree that the customer is willing to provide information about preferences and behavior.

For many automated and interactive services that are used repeatedly (online shopping, banking, ...), personalization is effectively on a customer-by-customer basis.

(This is sometimes called "micro-segmentation" or "segments of 1")

Nevertheless, the design of systems and services and especially the "dimensions of personalization" is strongly determined by customer segmentation.
Segmentation Dimensions

By "business architecture" - product group, channel, geography
Demographic / "life phase"
Psychographic / behavioral
Profitability - value to the business

Segmentation Criteria Used by Banks

FIGURE 2: SEGMENTATION CRITERIA USED BY SURVEYED BANKS

Source: Customer Value Management and Development – A Strategic Perspective by Edgar, Dunn & Company
Some Segmentation Complications for the Bank

- Some customers use multiple products
- Some customers use multiple channels
- Some customers move within and between geographical regions
- Some customers fit multiple / conflicting demographic categories

RFM Segmentation

- Recency - when did a customer last buy from you
- Frequency - how often in some time period
- Monetary value - total monetary value of the customer's transactions

Typically segment customers into 5 20% segments on each dimension, creating 125 different RFM codes

An RFM code ranks a single customer against other customers for likelihood to respond and future value. High scores equal high future value; low scores equal low future value.
Profitability Matters more than Frequency

60% of the highest-status frequent flyers were in the “least profitable” segment

* Decile 1 = most profitable FFP members; Decile 10 = least profitable

Profitability x Satisfaction Diagnostics

[Diagram showing a scatter plot with bubbles representing customers and their profitability and satisfaction levels. The diagram is labeled with 'At-Risk' and 'Model' sections, with different segments marked as 'A', 'B', and 'C'. The x-axis represents customer satisfaction, and the y-axis represents billed revenues. The bubble size represents forecasted revenues.]
Enterprise Decision Management (EDM) is a systematic approach to automate and improve decisions across the enterprise. It allows businesses to:

- Make more profitable and targeted decisions
- In the same way, over and over again
- While being able to adapt “on-the-fly”

**PRECISION**

**CONSISTENCY**

**AGILITY**

---

Descriptive Customer Models -- Identify Relations

*Use:* Find the relationships between customers

*Example:* Sort customers into groups with different buying profiles.

*Operation:* Analysis is generally done offline, but the results can be used in automated decisions -- such as offering a given product to a specific customer.
Predictive Customer Models -- Calculate Risk / Opportunity

Use: Identify the odds that a customer will take a specified action

Example: Will the customer pay me back on time? Will the customer respond to this offer?

Operation: Models are called by a business rules engine to "score" an individual or transaction, often in real time.

Fine-grained Segmentation to Prevent "Adverse Selection"
"Pay As You Drive" Insurance

Most insurance is sold using customer segmentation based on historical data. The cost of PAYD insurance reflects actual risk, and thus incents drivers to adopt safer habits.

<table>
<thead>
<tr>
<th>Current Pricing</th>
<th>Efficient Pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motorist Reduces Vehicle Trips</td>
<td>Motorist Reduces Vehicle Trips</td>
</tr>
<tr>
<td>Reduced Crashes and Claim Costs</td>
<td>Reduced Crashes and Claim Costs</td>
</tr>
<tr>
<td>Cost Savings (Dispersed to all motorists within the rate class)</td>
<td>Cost Savings (Returned to the individual motorist)</td>
</tr>
</tbody>
</table>

With current insurance pricing, crash cost savings from reduced driving are dispersed to all motorists in their rate class. PAYD pricing returns more savings to individuals who reduce their driving. This rewards motorists for reducing mileage and makes premiums more accurately reflect the insurance costs of each individual vehicle.

Yield Management

For firms that provide services with high fixed costs and low variable costs (airlines, cruise ships, hotels, rental cars, amusement parks...) profitability is directly tied to their overall sales.

So the firm wants to maximize its capacity utilization, even if it requires selling (or pre-selling) some of that capacity at reduced prices, as long as those prices exceed its variable costs.

The essence of yield management is customer segmentation:

- What dimensions or restrictions enable customers to be categorized by their price sensitivity?
- What price should be offered to each customer category?
- How much capacity should be allocated at each price?

Yield management is simple in principle but requires substantial computing in practice.
Yield Management: Modeling Customer Segments

Demand for seats booked on a specific flight

Leisure demand curve

Business demand curve

Number of days before departure

Yield Management: Maximizing Profits

Proper balance between low and high yields

Revenue

Breakeven

Yield (contribution or revenue per passenger-mile)

Seats are booked too early. The plane is filled with cheap seats.

Too many seats are set aside. Expensive seats remain empty.
Loyalty Programs

Programs to encourage customers to voluntarily repurchase and recommend a product or service have been around for nearly 100 years.

Before "technology infusion," loyalty programs were embodied in "tangible evidence" like stamps or coupons.

Today, loyalty programs require sophisticated technology for collecting, mining, and operationalizing customer data.
Loyalty "Value Chain"

Core Rewardable Behaviors
- Product Purchase
- Customer Referrals
- Value Added Service Enrollment
- Tenure
- Total Balances
- Usage
- Relationship Depth

Reward Types
- Points and Cashback
- Discounted Services / Fee Elimination
- Merchant / Partner Discounts
- Financial Credit
- Preferential Treatment / Recognition
- Personalization

Tangible Outcomes
- Increased Revenue
- Reduced Attrition
- Increased Profit per Customer
- Increased Product Sales
- Increased Customers

Intangible Outcomes
- Favorable References
- Higher Placement in Consideration Set / Reduction of Competitor Influence in Consideration
- Improved Brand Perception
- Improved Likelihood of Repurchase

The New Loyalty "Service (eco-) System"

Vendor Partners
- Bank, Merchant
- Associations
- Reward Providers
- Third Party Processors

Levels of Award & Accumulation
- Single Consumer
- Joint Account
- Household
- Consumer and Small Business

Products, Currencies, Earning Algorithms
- Credit Card
- Debit Card
- Online Statement
- Online Banking
- Bill Payment
- Direct Deposit

Technologies & Channels
- Branch
- Point of Sale
- ATM
- IVR
- Internet
- Mobile Phone

Reward Types
- Cash
- Merchandise
- Travel
- Services
- Fee / Price Discount
- "Make your Own"

Redemption Options
- Gift Card
- Statement Credit
- Online
- Phone

Functionality
- Enrollment
- Award Assignment
- Tracking & Reporting
- Redemption
- Customer Service

Figure 1: Loyalty Framework

Figure 5: The Increasingly Complex Requirements of Loyalty
Customer Relationship Management

CRM is the processes / applications that a firm uses to manage information about and interactions with its customers.

CRM applications help a firm be viewed as a unified entity by customers even though they interact with employees in diverse roles and organizations.

Put simply: CRM captures what a company knows about its customers.

- Direct interactions with customers (meetings, sales calls, email, web contacts, transactions)
- Indirect interactions (ads, direct mail campaigns, billing)

This aggregated information is essential to providing effective customer service - - but it is also the foundation for loyalty services and incentives provided to customers.

From CRM to "Customer Experience Management"

A customer's satisfaction with a service or system is the cumulative or net result of all of the touch points across all of his encounters.

But the (different) people responsible for the (separate) touch points don't usually think of how their decisions collectively shape the customer's experience.

Customers want an "integrated approach" to meeting their needs or solving their problems.

But many parts of a company that create "touch points" still think that customer experiences were the responsibility of marketing and sales.
## CEM vs CRM

<table>
<thead>
<tr>
<th></th>
<th>What</th>
<th>When</th>
<th>How Monitored</th>
<th>Who Uses the Information</th>
<th>Relevance to Future Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Experience</td>
<td>Captures and distributes what a customer thinks about a company</td>
<td>At points of customer interaction: “touch points”</td>
<td>Surveys, targeted studies, observational studies, “voice of customer” research</td>
<td>Business or functional leaders, in order to create fulfillable expectations and better experiences with products and services</td>
<td>Leading: Locates places to add offerings to close gaps between expectations and experience</td>
</tr>
<tr>
<td>Management (CEM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer Relationship</td>
<td>Captures and distributes what a company knows about a customer</td>
<td>After there is a record of a customer interaction</td>
<td>Point-of-sales data, market research, Web site click-through, automated tracking of sales</td>
<td>Customer-facing groups such as sales, marketing, field service, and customer service, in order to drive more efficient and effective execution</td>
<td>Lagging: Drives cross selling by bundling products in demand with ones that aren’t</td>
</tr>
<tr>
<td>Management (CRM)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Tracking and Analyzing Customer Experiences

Measuring customer satisfaction is necessary but insufficient

Periodic interactions with current customers, check-ups, "how’s that new car working out?"
## Analyzing Past Patterns

<table>
<thead>
<tr>
<th>Pattern and Purpose</th>
<th>Owner</th>
<th>Data Collection Frequency and Scope</th>
<th>Collection and Analysis Methodology</th>
<th>Discussion and Action Forums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past Patterns: Captures a recent experience</td>
<td>Central group of functions</td>
<td>Persistent:</td>
<td>Web-based, in-person, or phone surveys, user forums and blogs</td>
<td>Analyzed within functions, central survey groups, or both</td>
</tr>
<tr>
<td>&gt; Extended to improve transactional experiences</td>
<td></td>
<td>&gt; Electronic surveys linked to high-volume transactions of an ongoing feedback system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Tracks experience goals and trends</td>
<td></td>
<td>&gt; Automatically triggered by the completion of a transaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Assesses impact of new initiatives</td>
<td></td>
<td>&gt; Focused, short-cycle, timed data collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Identifies emerging issues</td>
<td></td>
<td>&gt; Feedback voluntarily by users in online forums</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examples: Postinstallation or customer service follow-up, new-product purchase follow-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Analyzing Present Patterns

<table>
<thead>
<tr>
<th>Pattern and Purpose</th>
<th>Owner</th>
<th>Data Collection Frequency and Scope</th>
<th>Collection and Analysis Methodology</th>
<th>Discussion and Action Forums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present Patterns: Tracks current relationships and experience issues with an eye toward identifying future opportunities</td>
<td>Central group, business units, or functions</td>
<td>Periodic:</td>
<td>Web-based surveys preceded by preparation in person, direct contact in person or by phone, moderated user forums, focus groups and other regularly scheduled formats</td>
<td>Initial analysis by sponsoring group, broader trends and issues forwarded to general managers' strategic and operating forums, deeper analysis of emerging issues at the corporate, business unit, or local level</td>
</tr>
<tr>
<td>&gt; Keeps a consistent yet deeper watch on state of relationship and other factors</td>
<td></td>
<td>&gt; Quarterly account reviews, relationship studies, user experience studies, user group polling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Looks forward as well as backward</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Used with more critical populations and issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Examples: Bimonthly account reviews, &quot;follow them home&quot; user studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analyzing Potential Patterns

<table>
<thead>
<tr>
<th>Pattern and Purpose</th>
<th>Owner</th>
<th>Data Collection Frequency and Scope</th>
<th>Collection and Analysis Methodology</th>
<th>Discussion and Action Forums</th>
</tr>
</thead>
</table>
| Potential Patterns: Targets inquiries to unveil and test future opportunities. | General management or functions | Pulsed:  
> One-off, special-purpose driven  
> Interim readings of trends | Driven by specific customers or unique problems  
> Very focused  
> Incorporates existing knowledge of customer relationship | Centered within sponsoring group, with coordination by and support from central group |
| Examples: Ethnographic design studies, special purpose market studies, focus groups | | | | |

Some Advice About Customer Surveys

Surveys are low-cost and convenient mechanisms for measuring past and present patterns

A well-designed survey "must itself avoid becoming an unfortunate aspect of the customer experience"

- Don't make them long and difficult to complete
- Don't ask for information you obviously have (like the details of the transaction that led to the follow-up survey)
- Enable the customer to tell you information you aren't asking for
Readings for 8 December


