28. Customer Segmentation

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Plan for ISSD Lecture #28

Architectures for Personalization (from 12/1)

Recommendation Systems (from 12/1)

Motivating Customer Segmentation

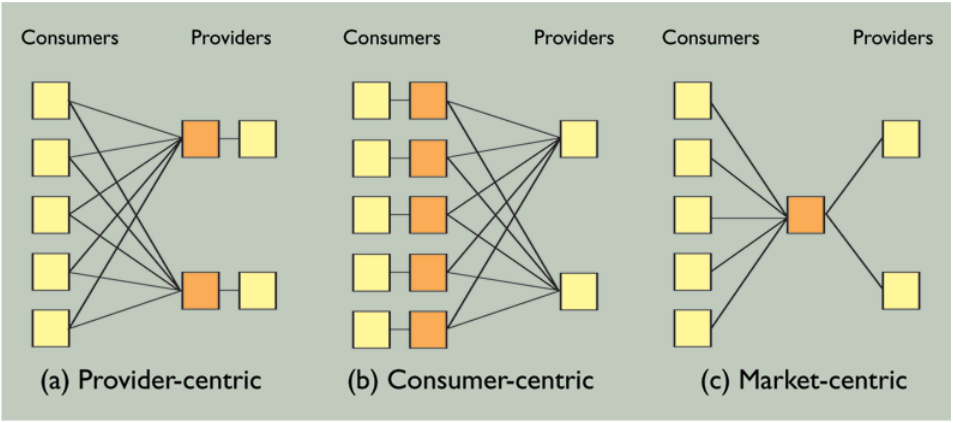
Segmentation Dimensions

Segmentation Modeling

Loyalty Programs

CRM and CEM

Architectures for Personalization



Architectures for Personalization

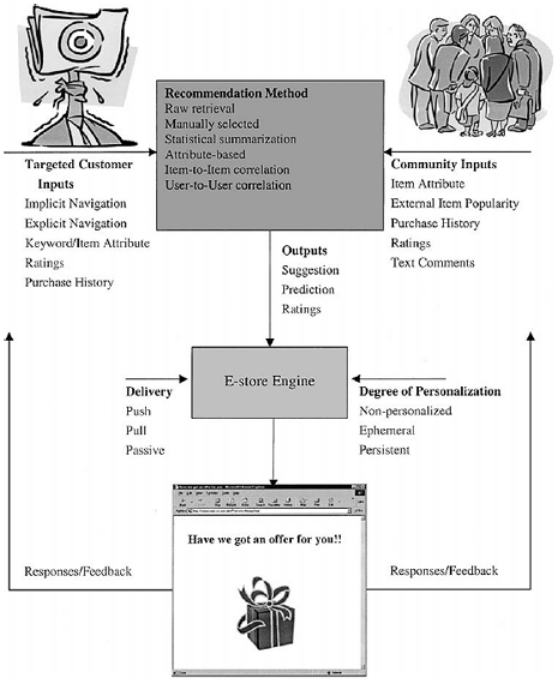
Adomavicius & Tuzhhilin describe three architectures for personalization

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?

Recommendation Systems



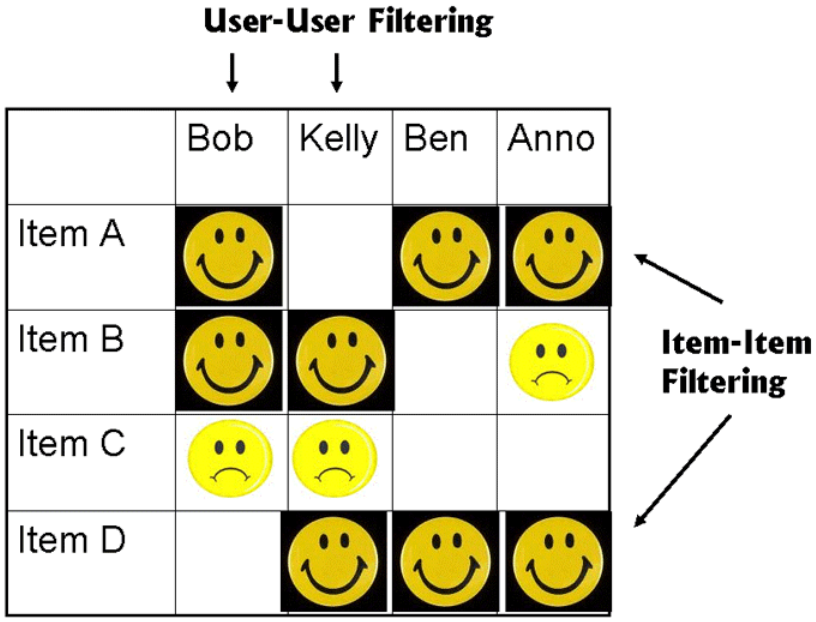
Item Recommendation

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

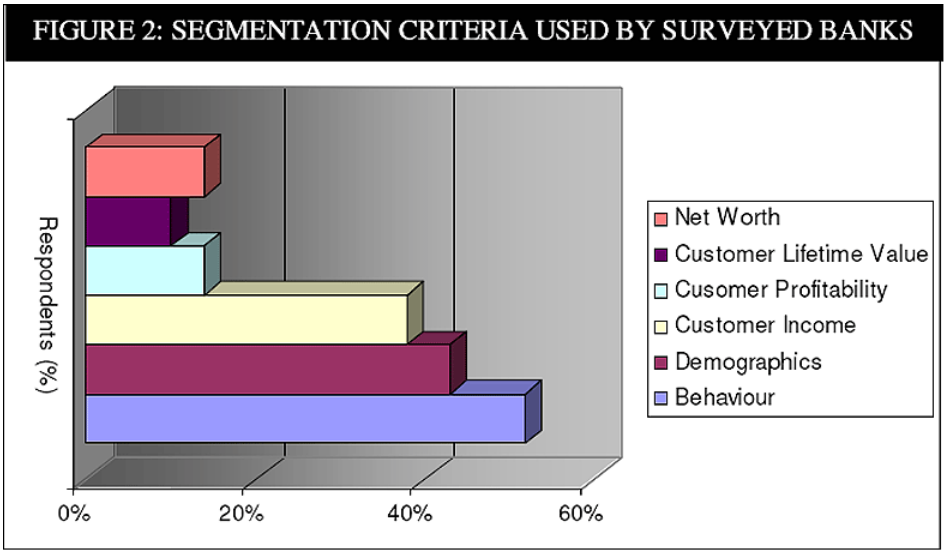
Demographic / "life phase"

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

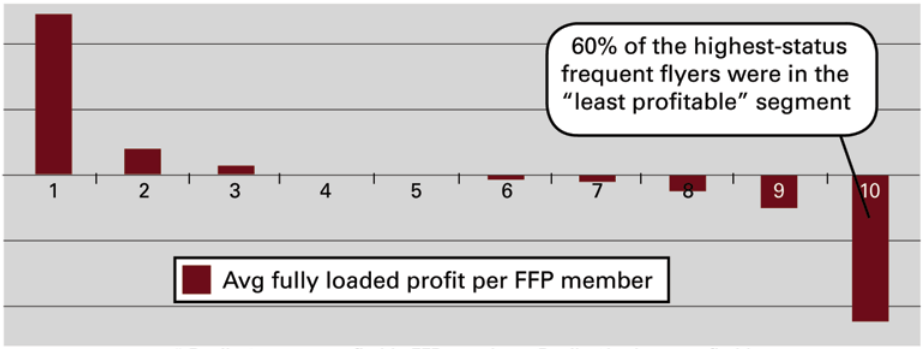
Frequency - how often in some time period

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

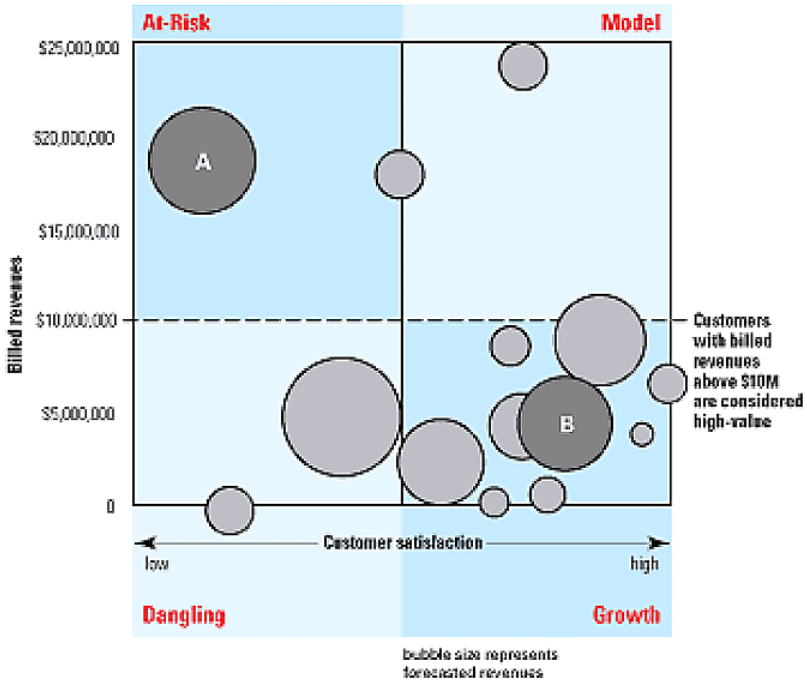
An RFM code ranks a single customer against other customers for likelihood to respond and future value. High scores equal high future value; low scores equal low future value.

Profitability Matters more than Frequency



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

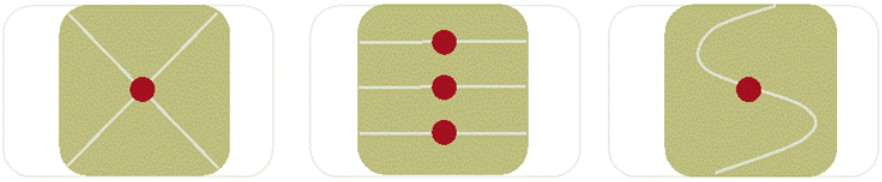
Profitability x Satisfaction Diagnostics



Enterprise Decision Management (from Taylor)

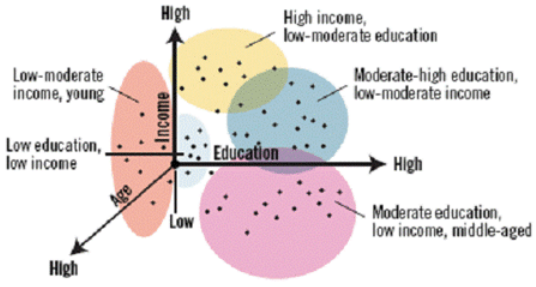
Enterprise Decision Management (EDM) is a systematic approach to automate and improve decisions across the enterprise.

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



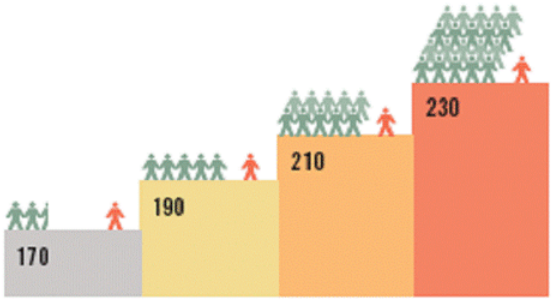
Descriptive models can be used to categorize customers into different categories – which can be useful in setting strategies and targeting treatment.

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



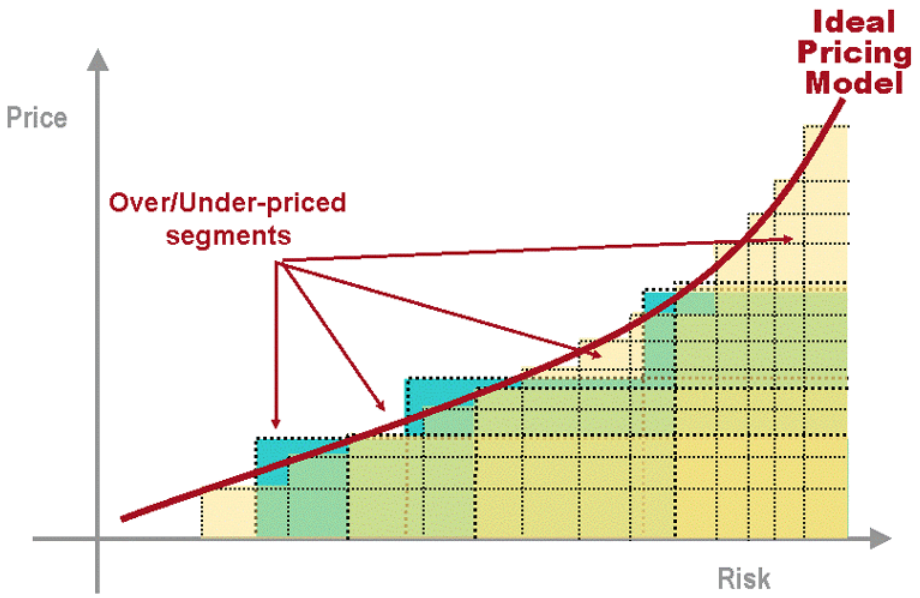
Predictive models often rank-order individuals. For example, credit scores rank-order borrowers by their credit risk – the higher the score, the more "good" borrowers for every "bad" one.

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

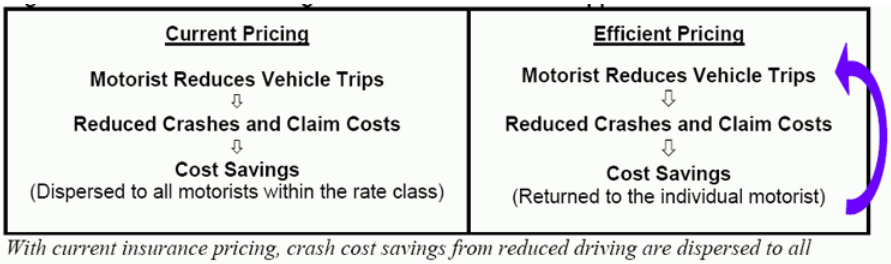
Fine-grained Segmentation to Prevent "Adverse Selection"



"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



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

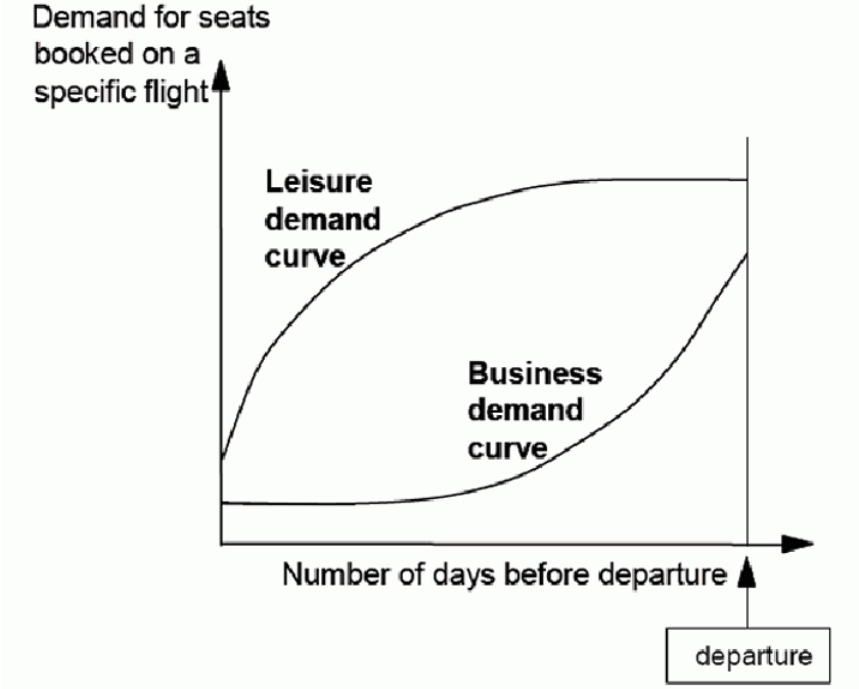
So the firm wants to maximize its capacity utilization, even if it requires selling (or pre-selling) some of that capacity at reduced prices, as long as those prices exceed its variable costs

The essence of yield management is customer segmentation

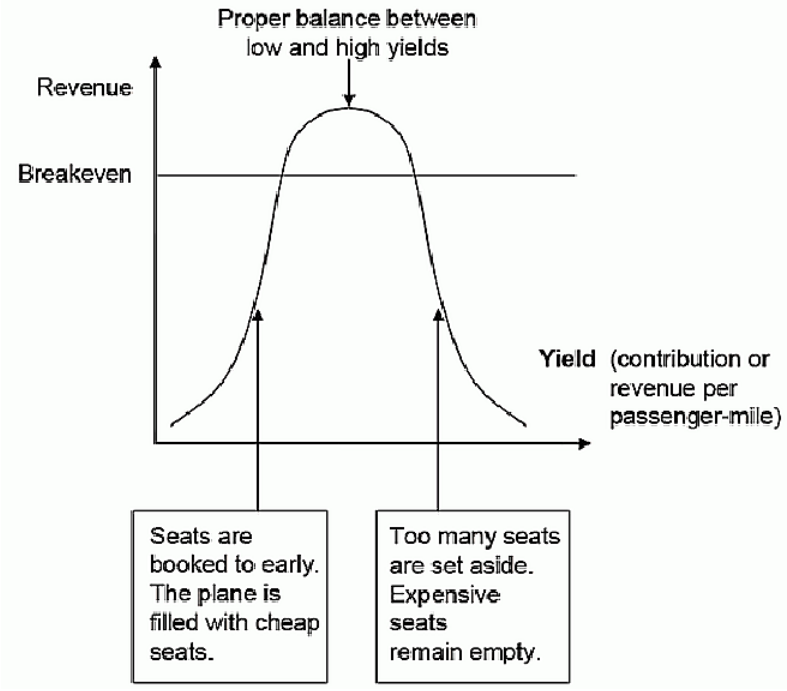
- What dimensions or restrictions enable customers to be categorized by their price sensitivity?
- What price should be offered to each customer category?
- How much capacity should be allocated at each price?

Yield management is simple in principle but requires substantial computing in practice

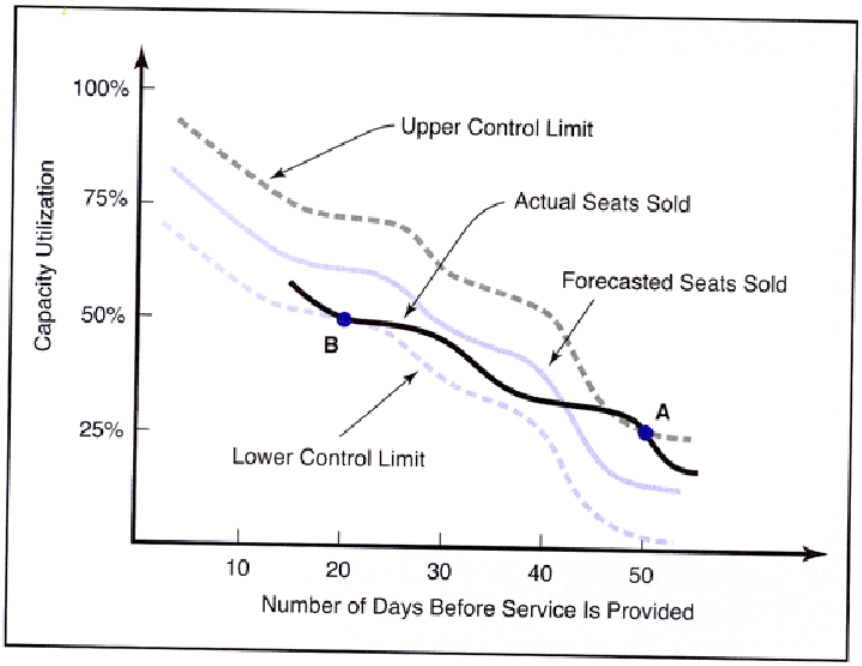
Yield Management: Modeling Customer Segments



Yield Management: Maximizing Profits



Yield Management: The Booking Curve



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"

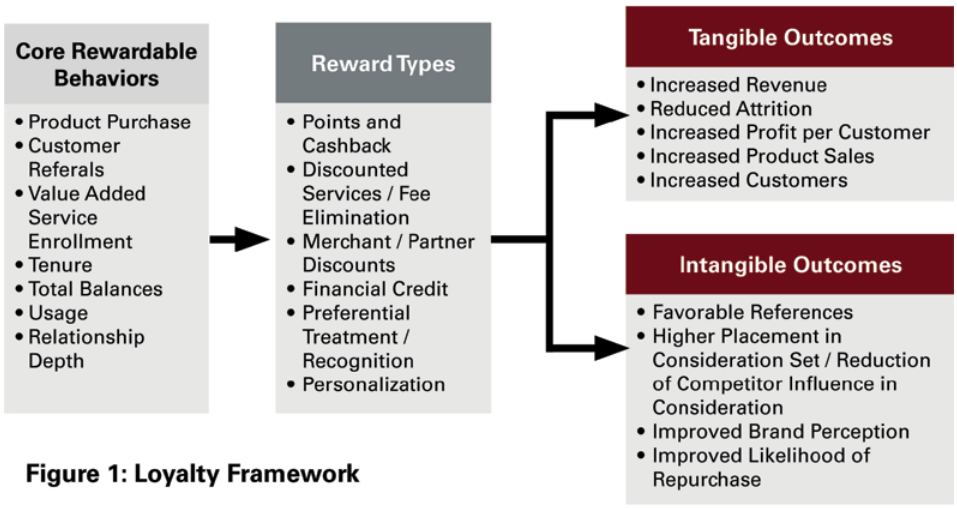


Figure 1: Loyalty Framework

The New Loyalty "Service (eco-) System"

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

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

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

Pattern and Purpose	Owner	Data Collection Frequency and Scope	Collection and Analysis Methodology	Discussion and Action Forums
Past Patterns: Captures a recent experience. > Intended to improve transactional experiences > Tracks experience goals and trends > Assesses impact of new initiatives > Identifies emerging issues Examples: Post-installation or customer service follow-up, new-product-purchase follow-up	Central group or functions	**Persistent:** > Electronic surveys linked to high-volume transactions or an ongoing feedback system > Automatically triggered by the completion of a transaction > Focused, short-cycle, timed data collection > Feedback volunteered by users in online forums	> Web-based, in-person, or phone surveys > User forums and blogs	> Analyzed within functions, central survey groups, or both > Cross-functional issues directed to general managers > Strategic analysis and actions directed by general managers

Analyzing Present Patterns

Pattern and Purpose	Owner	Data Collection Frequency and Scope	Collection and Analysis Methodology	Discussion and Action Forums
Present Patterns: Tracks current relationships and experience issues with an eye toward identifying future opportunities. > Keeps a consistent yet deeper watch on state of relationship and other factors > Looks forward as well as backward > Used with more critical populations and issues Examples: Biannual account reviews, "follow them home" user studies	Central group, business units, or functions	**Periodic:** > Quarterly account reviews > Relationship studies > User experience studies > User-group polling	> 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	> 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

Analyzing Potential Patterns

Pattern and Purpose	Owner	Data Collection Frequency and Scope	Collection and Analysis Methodology	Discussion and Action Forums
Potential Patterns: Targets inquiries to unveil and test future opportunities. Examples: Ethnographic design studies, special-purpose market studies, focus groups	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

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

Luke Hohmann, “The difference between marketechure and tarchitecture, ” IEEE Software, July/August 2003.

David Messerschmidt & Clemens Szyperski, “Marketplace issues in software planning and design,” IEEE Software, May/June 2004.

G. Birk, I. Heller, K. John, T. Schmid, & K. Muller, “Product line engineering: The state of the practice,” IEEE Software, Nov/Dec 2003.

Ilan Oshri, Sue Newell, & Shan L. Pan, “Component reuse strategy in complex products environments,” Communications of the ACM, December 2007.