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MARKETING AUTOMATION ON THE INTERNET

Steps toward formulating the challenge

John D.C. Little

MIT Sloan School

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MARKETING AUTOMATION

AGENDA

* Motivation
* Formulating the Problem:
  - 5 components
* Marketing Mix Variables
* Emerging Research Challenges

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MOTIVATION

The world is coming our way:

* almost everything on the web must be programmed
* decision rules and models are required
* huge amounts of data are automatically collecte
* many opportunities exist to improve operations

A situation made to order for choice models!

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MOTIVATION (cont.)

Smith's (2000) game theory analysis of internet booksellers concludes:

* major branded booksellers will tacitly collude
* the others will adopt mixed high/low pricing
* these predictions "compare well" to actual pricing behavior

But this type of research doesn't make detailed price recommendations.

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MY QUESTION

What do we tell retailer X to do when customer Y arrives on Monday morning?

* what specific prices (and values of other marketing mix variables) should be set?
* how can retailer X adaptively control the marketing mix over time?
* what should its overall strategy be?

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A FRAMEWORK FOR MARKETING AUTOMATION

(as designed for a Circuit City or an Amazon)

Levels of system operation:

1. Data inputs
2. Real time decision rules
3. Updates of the decision rules
4. Feedback to site management
5. Strategy choice

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A FRAMEWORK FOR MARKETING AUTOMATION (cont.)

Level 1: Data inputs

- clickstreams of visitors and customers
- data from comparison engines, spiders

Level 2: Real time decision rules

- price
- promotion
- display
- page design on the fly
- personalization

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A FRAMEWORK FOR MARKETING AUTOMATION (cont.)

Level 3: Updating decision rules

- analysis of historical data
- fine tuning of parameters
- adaptive experimentation

Level 4: Feedback to site management

- quality control, trend monitoring
- early warning on market changes

Level 5: Strategy choice

- positioning: Saks or Walmart?
- target segments

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WHAT ARE THE MARKETING MIX VARIABLES?

What do we see at:

Circuit City?
BizRate?

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A HIERARCHY OF DECISION VARIABLES

First, an allocation of space to functions:

* title
* search box
* sponsored advertising
* special offers
* promoted products
* top sellers
* category index
* administrative items

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A HIERARCHY OF DECISION VARIABLES

But a function often contains choices, sub-choices, ... e.g.

promoted products
* number
* product 1
  - price
  - picture
  - link to product advisor
  - sales copy
    version 1
    ...
* product 2
  ...

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EMERGING RESEARCH AREAS

* Control system optimization tools
* Database design for marketing automation
* Recommendation engines
* Customer acquisition marketing

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CONTROL SYSTEM OPTIMIZATION TOOLS

* the most fun?
* classical optimization
* parameter estimation
* optimal control
* adaptive control
* reinforcement learning
* machine learning

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DATABASE DESIGN FOR MARKETING AUTOMATION

* keep raw customer histories?
* extracts
  - time since last purchase
  - amount of purchases
  - ....
* external market data
  - shares, prices, promotions, ..
  - from shopbots
  - from own spiders
* individual choice models
* need for a model to determine data value

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RECOMMENDATION ENGINES

* recommendation systems and collaborative filtering (Ansari et al., 2000)

* product advisors (Urban et al., 1998)

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CUSTOMER ACQUISITION MARKETING

* arrangements with comparison engines
* permission based email (Ansari and Mela, 2000)
* affiliate marketing
* bounties to current customers
* traditional media

No dearth of research opportunities

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