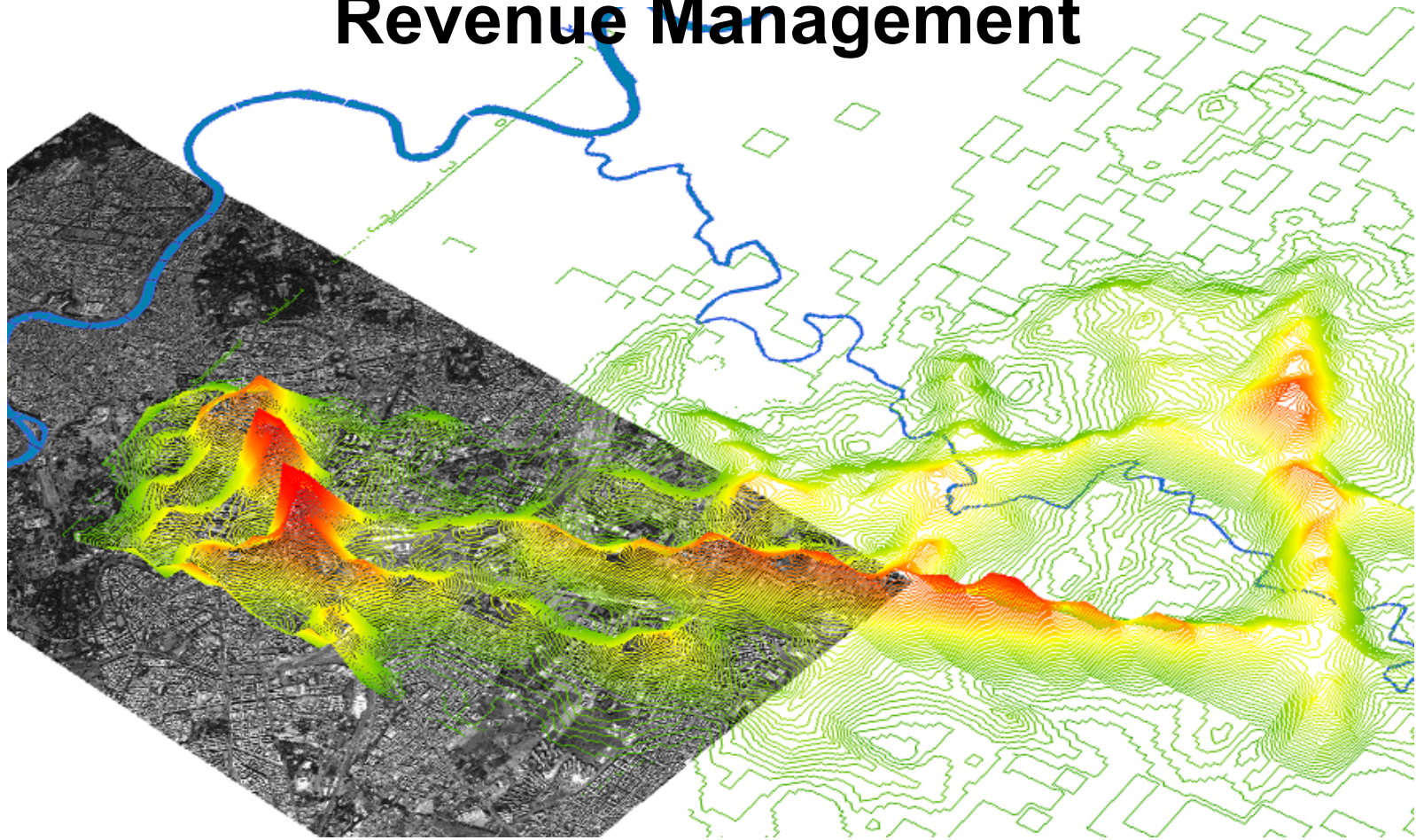


# Informedness and Customer-Centric Revenue Management



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Rotterdam School of Management, Erasmus University  
Prof. Aart Bosman Award, Groningen, November 04, 2011

# Companies are offering variety



ratebeer

Top By Category

## Heineken Premium Light

Percentile **1** overall

A Pale Lager brewed by Heineken Nederland, Zoeterwoude, Netherlands. Bottled on tap, common. Broad Distribution and the beer.

send corrections | shellingtag | 2 | 1

Reviews	Average	Score	ABV	Style Pct	Serve in
320	1.5/2.5	0	1.64/5.0	3.2%	10.3

Dimpled mug, English pint, Lager glass, Shaker

View Statistics

Commercial Description: Brewed in the same high quality tradition as the original Heineken, but lighter in taste and with fewer calories and carbohydrates. Being introduced in four select US markets beginning in June 2005: Phoenix, Arizona; Dallas, Texas; Tampa, Florida; and Providence, Rhode Island.

Most Recent | Top Raters | Highest Ratings | Who's Rated This? 28

dimenhetfield (73), Florida, USA

2.2	Aroma	Appearance	Flavor	Palate	Overall
4/10	3/5	5/10	2/5	8/20	

Aug 26, 2009

Every major beer company has to produce a "light" beer to appeal to the masses and this is no exception. Too light to have any flavor, normal and bland.

mike67 (50), New Jersey, USA

1.1	Aroma	Appearance	Flavor	Palate	Overall
2/10	2/5	2/10	2/5	3/20	

Aug 26, 2009

It was the only beer at my friend's Birthday party. I poured out the class into the sink after the first sip. Do not try it at home!

dkachur (2086), Charlottesville, Virginia, USA

1.5	Aroma	Appearance	Flavor	Palate	Overall
2/10	1/5	3/10	2/5	7/20	

Aug 26, 2009

12 ounce bottle from Whole Foods Market Charlottesville, VA. Pours a very pale yellow color with a thin head. Poor head retention and lacing. Aroma is mild skunk and grass with not much else. Taste is grains, corn and grass. Thin bodied.

Not only products, but also... information, delight, and *profit!*  
- Oh, yeah, that's why...

# Consumers are demanding variety



**7-Day Low Fare Prediction**

**Tip: Buy**

Fares Rising or Steady.  
Confidence: 75%

**Details** Applies to JFK>CDG only

**Daily Low Fare History**

\$795  
\$720  
\$645  
\$570

132 Days Ago Now

**Narrow Results By** [Show All](#)

Showing 22 of 322 options

▼ **Stops**

☒ Non-stop ☒ 1 ☐ 2+

\$697 \$616 —

► **Times**

**List View** **Time Grid** [Deals from New York: \\$128](#)

Lowest fares by time

	Pre-dawn 12a - 6a	Early am 6a - 9a	Morning 9a - 12p	Afternoon 12p - 5p	Evening 5p - 9p	Night 9p - 12a
<b>LEAVE</b>						
Pre-dawn 12a - 6a	—	—	—	—	—	—
Early am 6a - 9a	—	—	—	<a href="#">\$685</a>	<a href="#">\$616</a>	<a href="#">\$697</a>
Morning 9a - 12p	—	<a href="#">\$704</a>	<a href="#">\$704</a>	<a href="#">\$704</a>	<a href="#">\$663</a>	<a href="#">\$697</a>
Afternoon 12p - 5p	—	—	—	<a href="#">\$697</a>	<a href="#">\$616</a>	<a href="#">\$697</a>
Evening 5p - 9p	—	<a href="#">\$704</a>	<a href="#">\$704</a>	<a href="#">\$697</a>	<a href="#">\$616</a>	<a href="#">\$697</a>
Night 9p - 12a	—	—	—	—	—	—

**RETURNS**

	Pre-dawn 12a - 6a	Early am 6a - 9a	Morning 9a - 12p	Afternoon 12p - 5p	Evening 5p - 9p	Night 9p - 12a
Pre-dawn 12a - 6a	—	—	—	—	—	—
Early am 6a - 9a	—	—	—	—	—	—
Morning 9a - 12p	—	—	—	—	—	—
Afternoon 12p - 5p	—	—	—	—	—	—
Evening 5p - 9p	—	—	—	—	—	—
Night 9p - 12a	—	—	—	—	—	—

**Price** ▼ **Airline** **Airports** **Take-off - Land** **Stops** **Duration**

<a href="#">\$616</a> <a href="#">Select</a>	Air France	JFK>CDG	7:05p - 12:00p	1   10h 55m   econ
		CDG>JFK	6:50p - 9:05p	0   8h 15m   econ

[flight details](#) ►

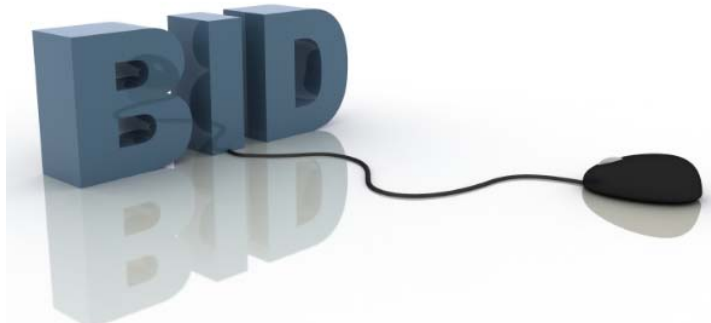
[\\$616 airfrance.fr](#)



Improved consumer informedness: alters discounts on competition, compromise, uncertainty



# Research - Nano Data



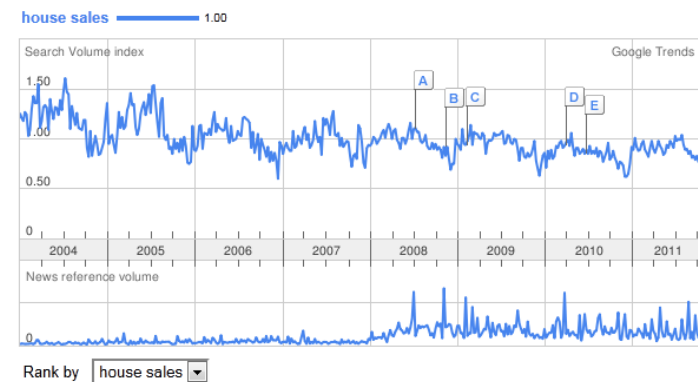
(Kauffman and Wood 2007)



(Ghose and Han 2011)



(Aral et al. 2011)



(Wu and Brynjolfsson 2009)

# Business Models - Informedness

**priceline.com**

flights | hotels | rental cars | vacation packages | cruises | tours & attractions | pricebreaker deals

Departing flight from **New York City, NY** to **San Francisco, CA (SFO)**  
Sun, Dec 18, 2011 – Sat, Dec 31, 2011 for 2 Adults

Flights to **San Francisco** from **\$393\***

**SAVE UP TO 40%**  
Name Your Own Price®

**FLIGHT + CAR for \$591\***  
Includes Economy Car

**BIG DEAL**  
**SAVE UP TO \$500**  
Flight + Hotel Packages

Filter your flight results: basic filter | advanced filter

Filters Applied: Stops

**\$591**  
Total \$678  
FLIGHT + CAR  
Choose Package

**Exclusive Flight+Car Package for your trip**

New York City, NY (JFK) → San Francisco, CA (SFO)  
Fly anytime between 6 am and 10 pm

Economy Car from Avis, Alamo, Budget, Hertz, or National  
Save more when you let us choose your flight and package it with a rental car. Upgrade to any car type you want.

Choose from **41 of 53** departing flights

Price | Airline | Departure Time

**\$468**  
Total \$505  
ROUND-TRIP  
Per Person  
Choose Departure

Alaska Airlines  
Flight 5703

DEPARTING  
New York City, NY (JFK) Sun Dec 18, 2011 7:15 am

ARRIVING  
San Francisco, CA (SFO) Sun Dec 18, 2011 10:40 am

**Step 2** ▶ **Name Your Own Price® and Save Up To 40%**

Total charges, including taxes and fees, are displayed on the following page.

**Name Your Own Price®**  
Per round-trip ticket

\$ .00

**BEST PRICE GUARANTEED**

**Step 3** ▶ **Enter Your Passenger and Ticket Information**

Your trip will start between 6am and 10pm on your travel dates. Although we always look for non-stop flights first, Priceline flights may make up to one connection each way. Your exact flights and times will be shown to you once your purchase is complete. We will issue convenient electronic tickets.

**dibbing.com** ...where it pays to have a look!

Home | How it Works | Recently Sold | Top Offers | Register | Search

**THE PRICE WILL DECREASE**  
each time a "dib" is placed

**EACH "dib" WILL SHOW THE PRICE**  
you have dibs until the time runs out

**WHEN THE PRICE APPEALS**  
you can buy the product

**TOP OFFER!**  
Apple iPhone 4 32GB

Apple iPhone 4, 32GB, Black

Starting Price: **£599.00**  
Click cost: **1 Credits**

Current Price: **???**

**SHOW PRICE**

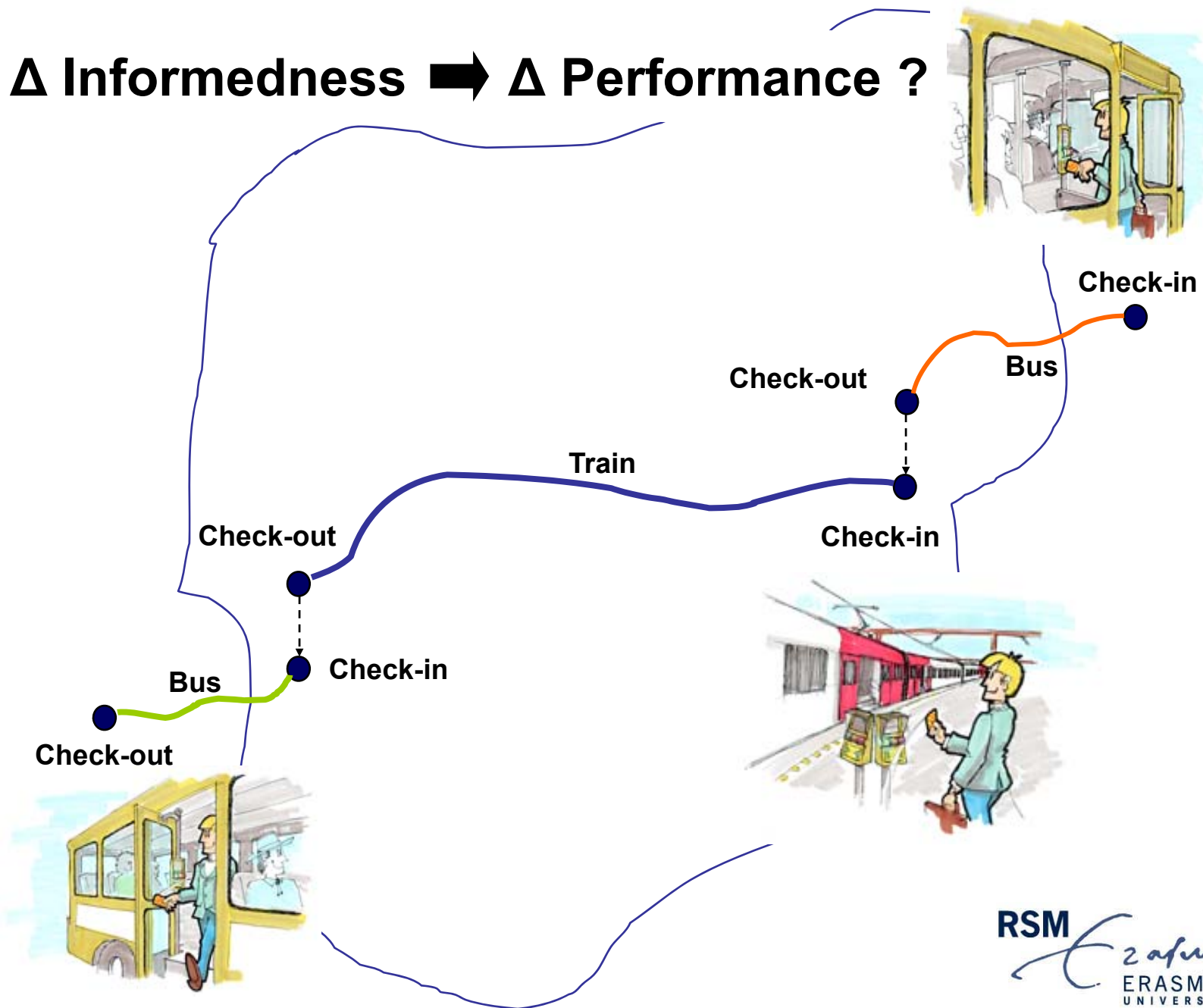
If the price appeals to you, buy the product

**CURRENT OFFERS** | SELECT CATEGORY | **EASY VIEW**

# Related Literature

- Value of information (Dhar and Sundararajan 2007)
- When not well informed, less product fit - product disutility distance (Hotelling 1929, Sallop 1979)
- Informational effects of advertising (Mehta et al. 2008)
- Informativeness that online product reviews create, how consumer choice is affected (Chen and Xie 2008)
  - Accuracy enables consumers to update product beliefs, their perceived level of utility comes closer to the true
  - Match or mismatch signal, affect product valuation
- Empirical evidence on effectiveness of online reviews on product sales: movies (Dellarocas et al. 2007; Forman et al. 2008), books (Li and Hitt 2008), and beers (Clemons et al. 2006).

# $\Delta$ Informedness $\Rightarrow$ $\Delta$ Performance ?



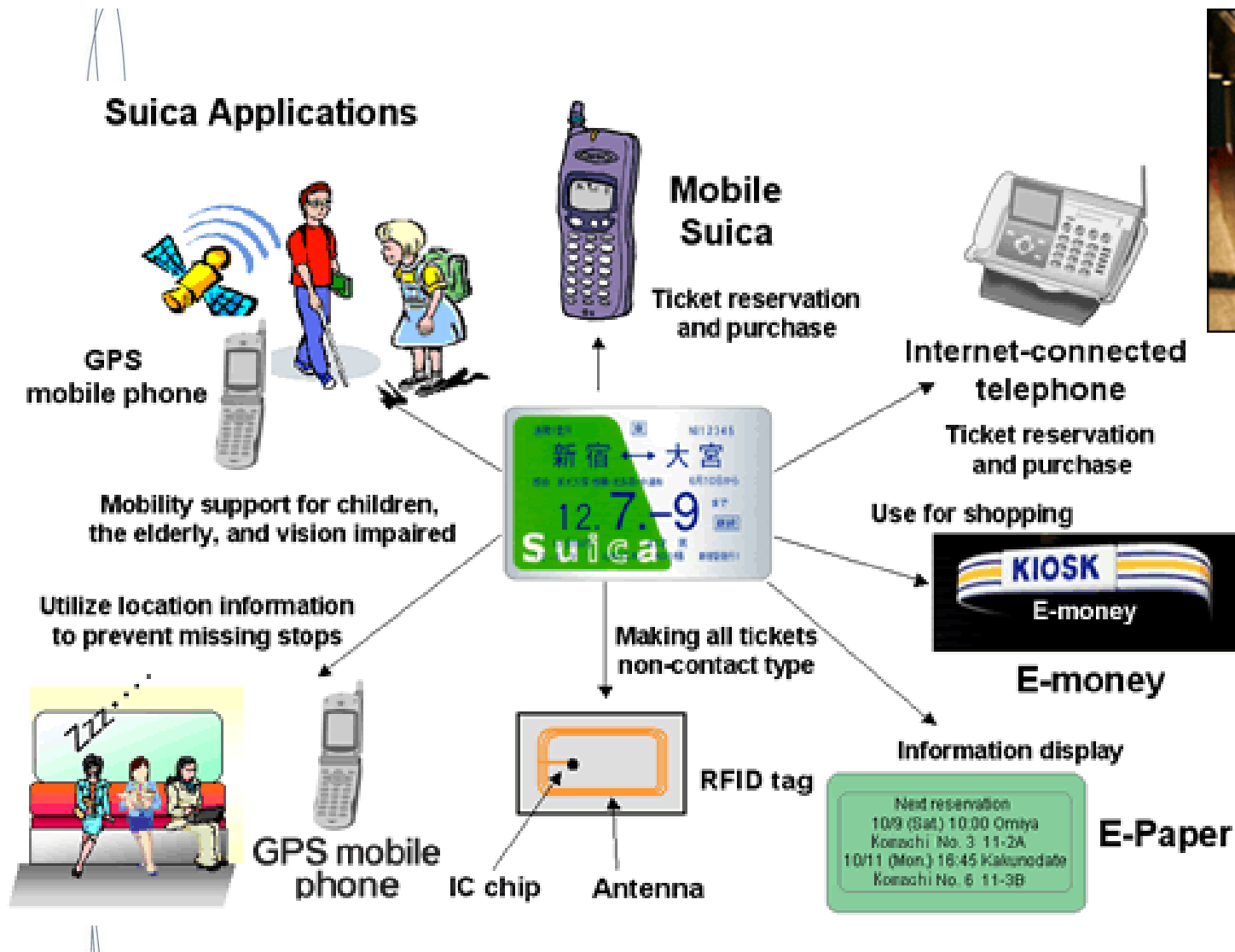


# **Firm informedness and value creation strategy**

**Consumer informedness  
and Heterogeneous Preferences**

**Informedness Through Learning  
and Customer-Centric RM**



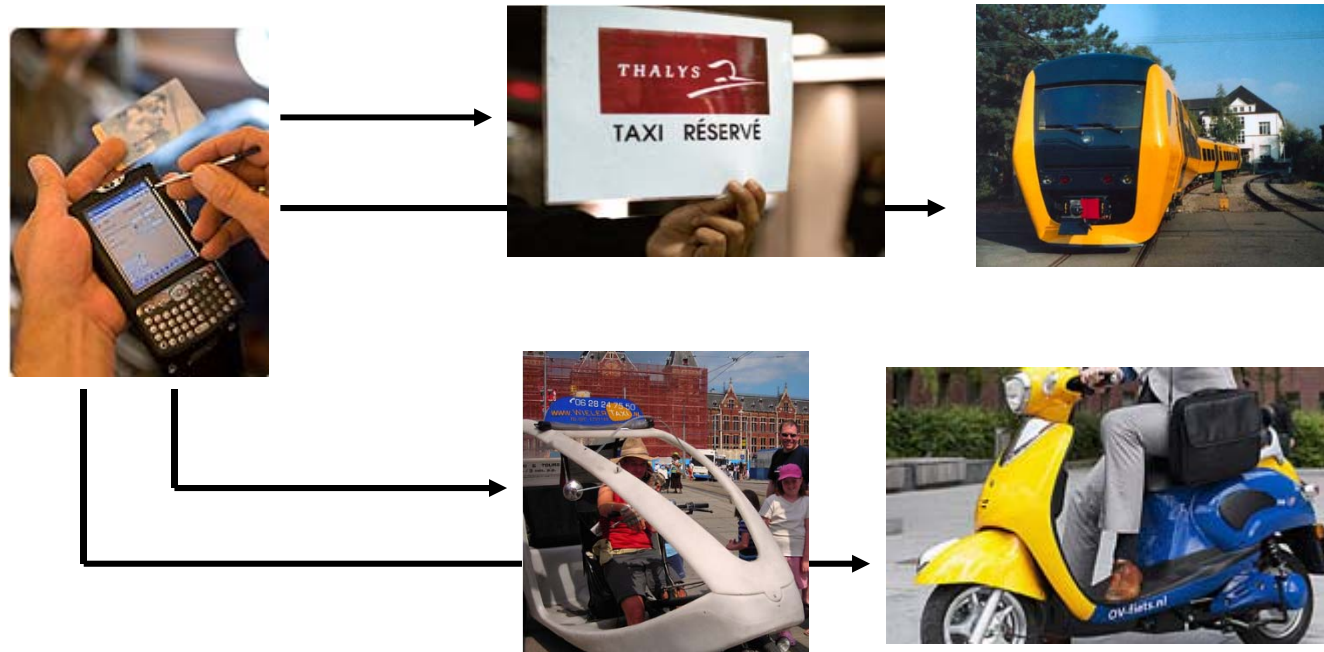


- World-wide implementation and fast adoption
  - Mobile SUICA in Tokyo: 20,000 subscribers in one week since Jan 2006
  - Beijing Yikatong: 1.5 million first day adopter in May 2006
- Different information capabilities, different value creation strategies.

Year	City (Country)	Transportation (Issuing Authority)	Name of SC
1997	Hong Kong (China)	Octopus Cards Limited	Octopus
1997	Tampere (Finland)	Tampere City Transport	Tampere Travel Card
1999	Washington D.C. (U.S.A.)	Washington Metropolitan Area Transit Authority	SmarTrip
2000	Taipei (Taiwan)	Taipei Smart Card Corporation	EasyCard
2001	Warsaw (Poland)	Warsaw Transport Authority	Warsaw City Card
2001	Tokyo (Japan)	East Japan Railway Company (JR East)	SUICA
2001	Paris (France)	Régie Autonome des Transports Parisiens (RATP)	Navigo Card
2002	Singapore	EZ-Link Private Limited	Ez-link
2002	Chicago (U.S.A.)	Chicago Transit Authority (CTA)	Chicago Card
2003	London (U.K.)	Transport for London (TfL)	Oyster
2004	Seoul (South Korea)	Korea Smart Card Co., Ltd	T-Money
2006	Beijing (China)	Beijing Municipal Administration & Communications Card Company Limited	Yikatong
2007	<b>The Netherlands</b>	Trans Link Systems (TLS)	<b>OV-chipcard</b>
2007	Toronto (Canada)	The Greater Toronto Transportation Authority	GTA Card

Li, T., van Heck, E., and Vervest, P. (2009) Information Capability and Value Creation Strategy: Advancing Revenue Management through Mobile Ticketing Technologies. *European Journal of Information Systems*, 18(1), 38-51.

# Business Network-Based Value Creation



- Network of firms deliver flexible network operations on an as-needed basis.
- Network orchestrator: orchestrate involvement; manage fair sharing.
- Shift from a national unimodal transport firm to a customer-oriented European multimodal service provider.



Firm informedness  
and value creation strategy




**Consumer informedness  
and Heterogeneous Preferences**

Informedness Through Learning  
and Customer-Centric RM



# Consumer Informedness

- Stated choice experiment
- Key steps:
  - attribute and levels
  - alternatives/choice sets
  - design experiments
  - pre-test
- Data collection:
  - >1000 panel customers

Travel Product Attribute	You are travelling from <u>Amsterdam</u> to <u>Rotterdam</u>		
	Choice 1	Choice 2	Choice 3
<b>Travel Mode</b>			
<b>Price</b>	€4 higher than current cost	€17 higher than current cost	Current cost
<b>Travel Time</b>	24 min faster than current travel time	30 min faster than current travel time	Current travel time
<b>Time Window</b>	Valid 9am – 4pm, and 6pm on	Valid all day	–
<b>Refund</b>	50% refund	90% refund	–
<b>Reservation</b>	No	Yes	–

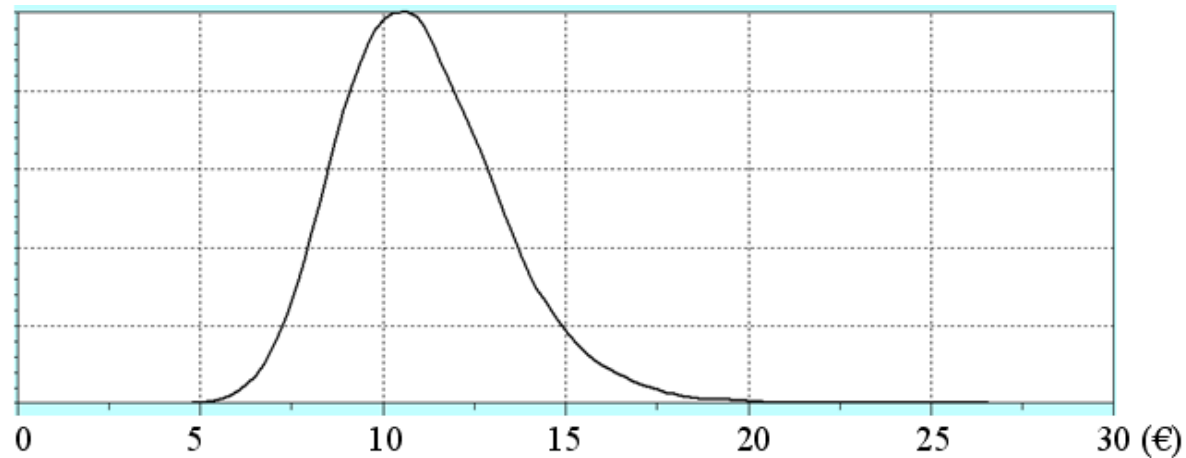
# Heterogeneous Consumer Behavior



**Trading Down**

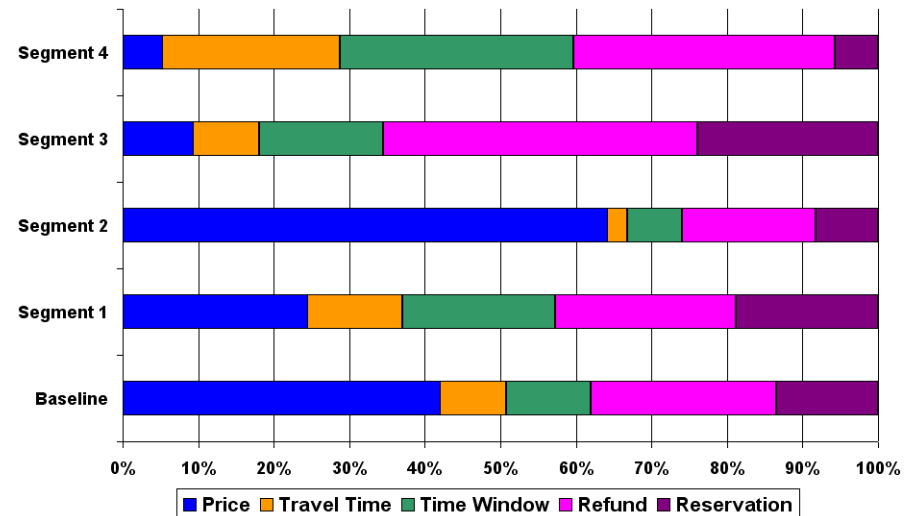


**Trading Out**



- Consumer preferences exhibit long-tail.
- Great heterogeneity: most pay €11.0 / hour; range from €5.0 to €26.5.

# Price vs. Product Informedness



- More precise price information / complete product information makes some consumers more price sensitive than others
- Recognize relative effect of each attribute diff across segments.
- Produce favorable responses among targeted consumer segments



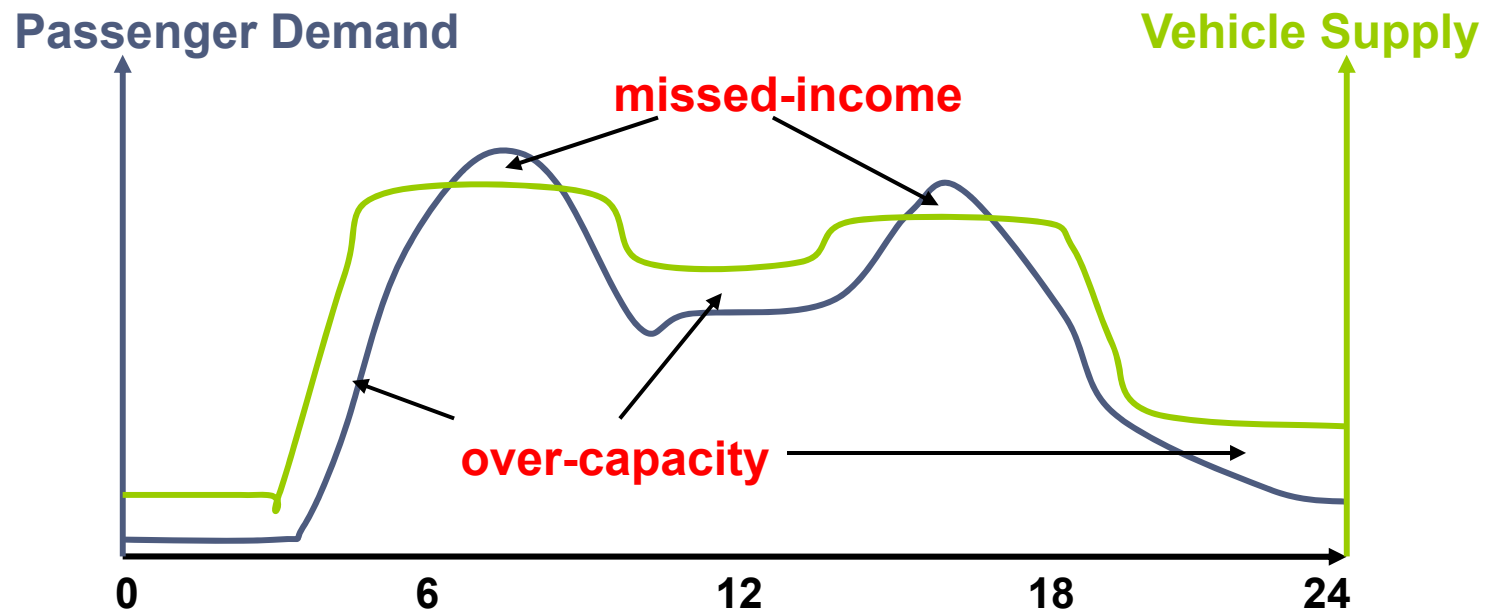
Firm informedness  
and value creation strategy

Consumer informedness  
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**Informedness Through Learning  
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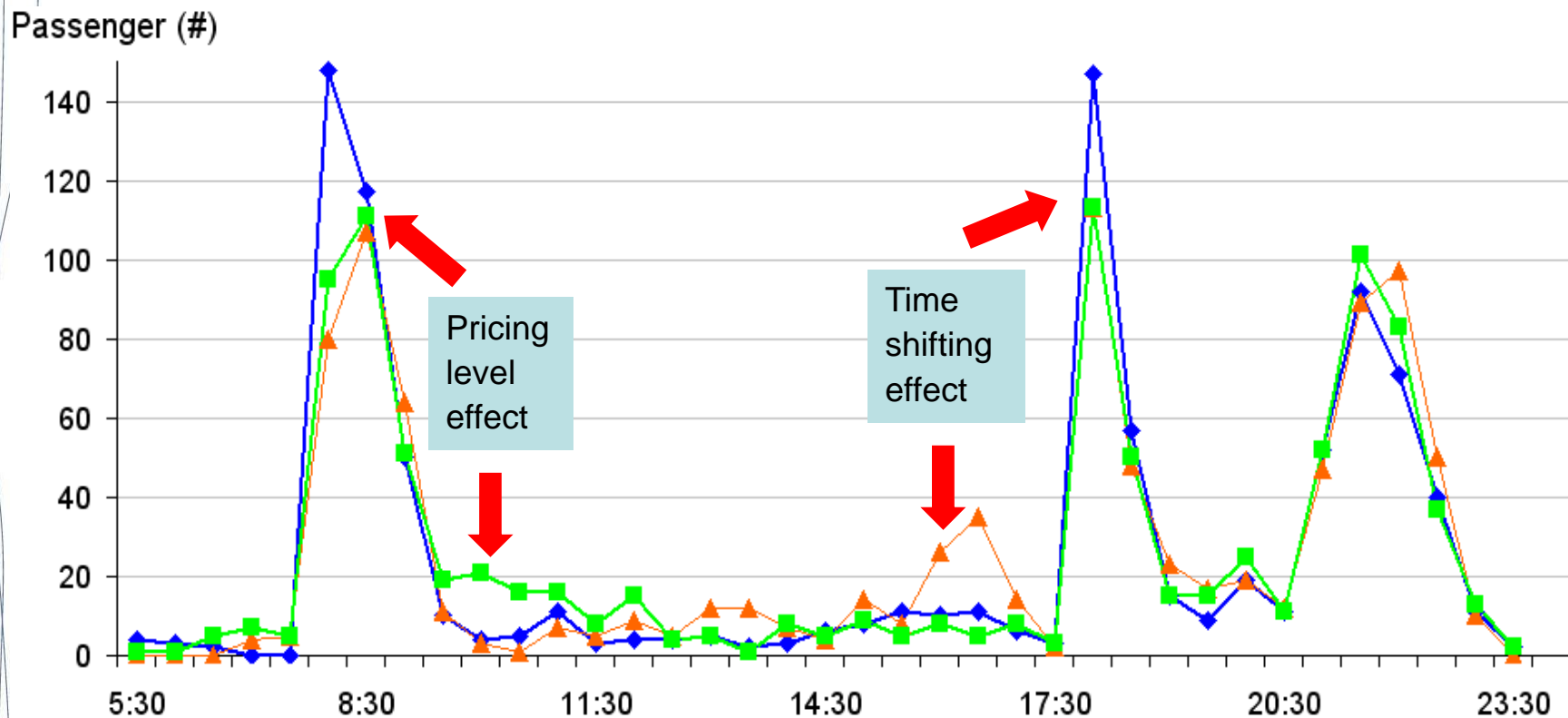
# How to Improve Yield?



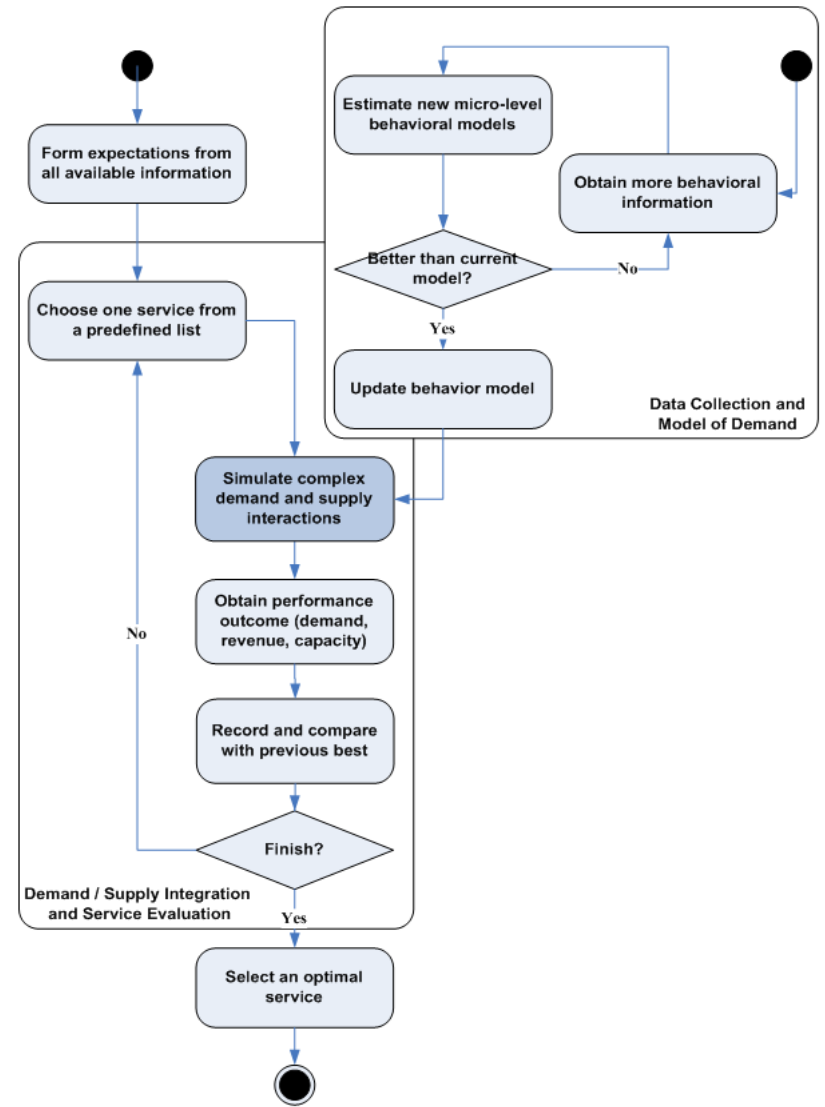
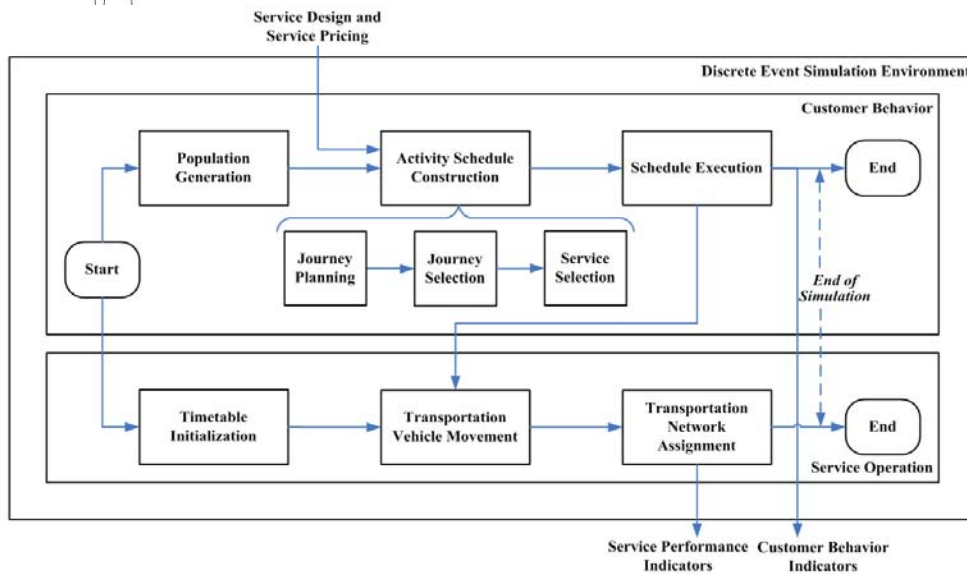
- Customer-centric approach: understand what influences customers' choice and how the decisions are made
- Requires a thinking "... which alternatives should we make available in order to profitably influence their choices"

# Informed Performance Evaluation

- Conduct stated choice experiments (>1200 customers)
- Design and develop an agent-based simulation
- Evaluate performance impact

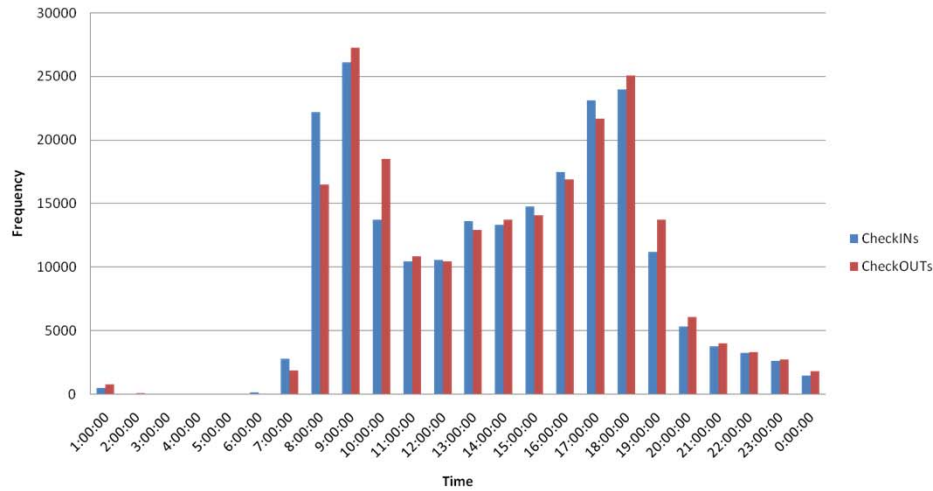


# Adaptive Learning in Service Operation

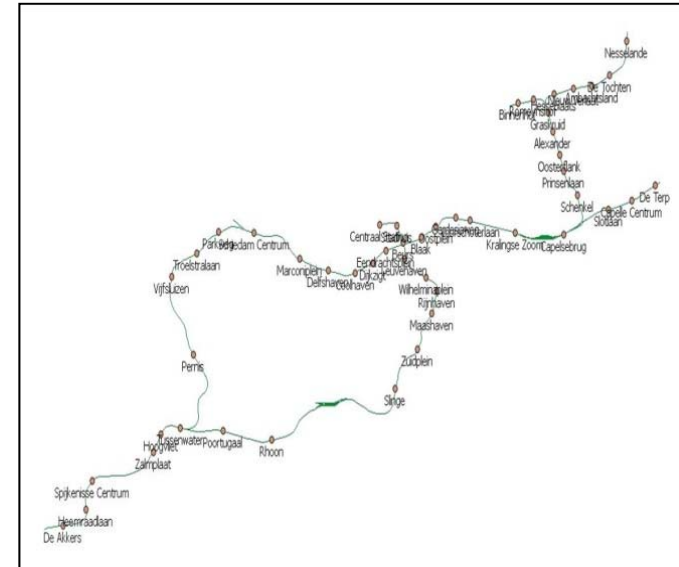
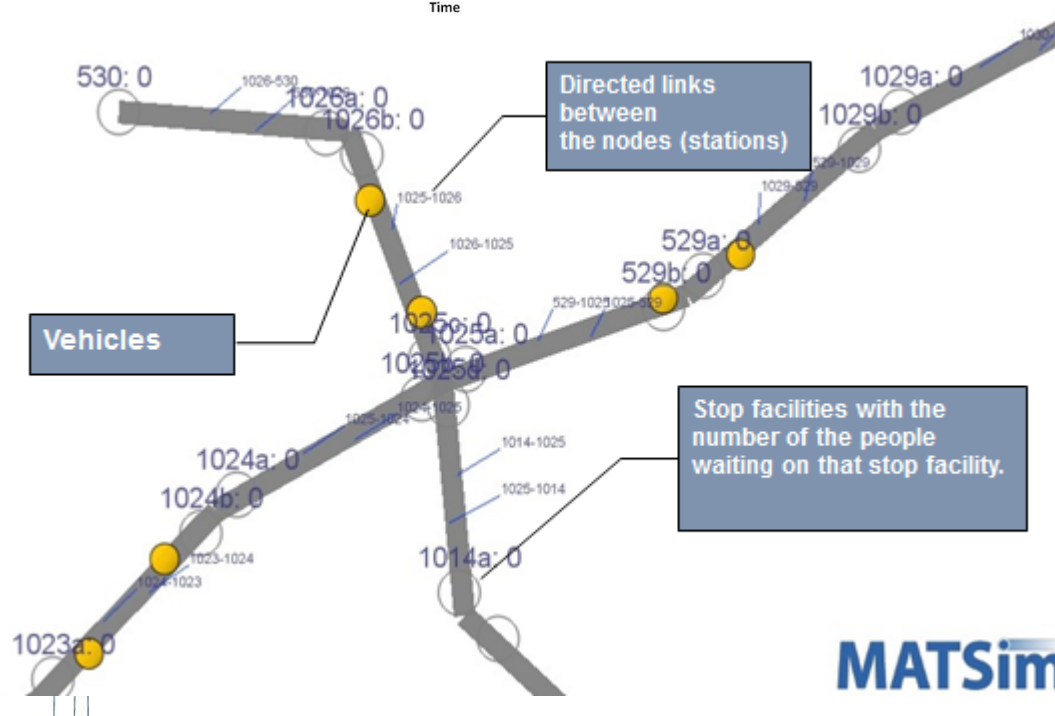
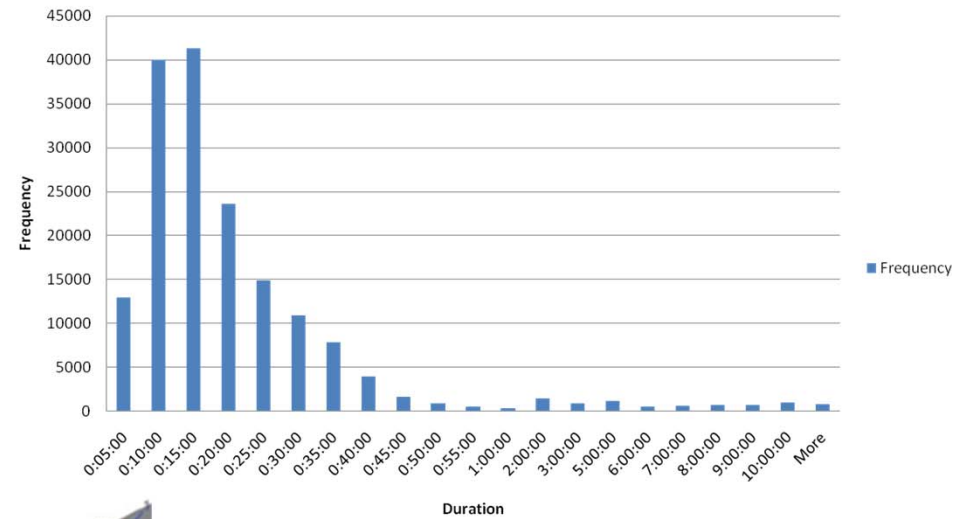


# Decipher Urban Dynamics

CheckIN and CheckOUT Time Distribution

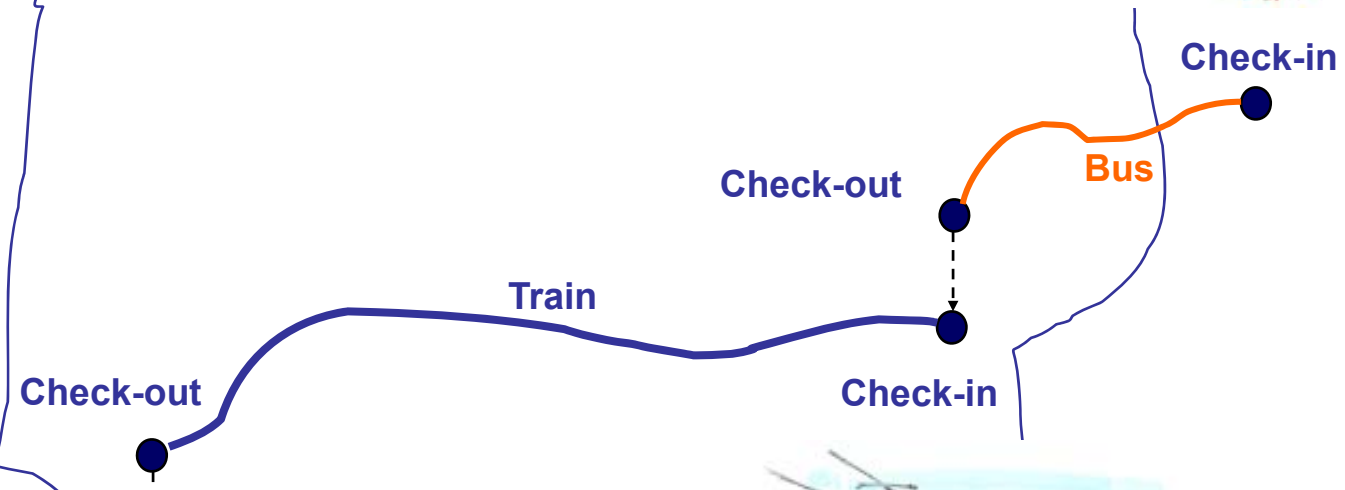


Trip Duration Distribution





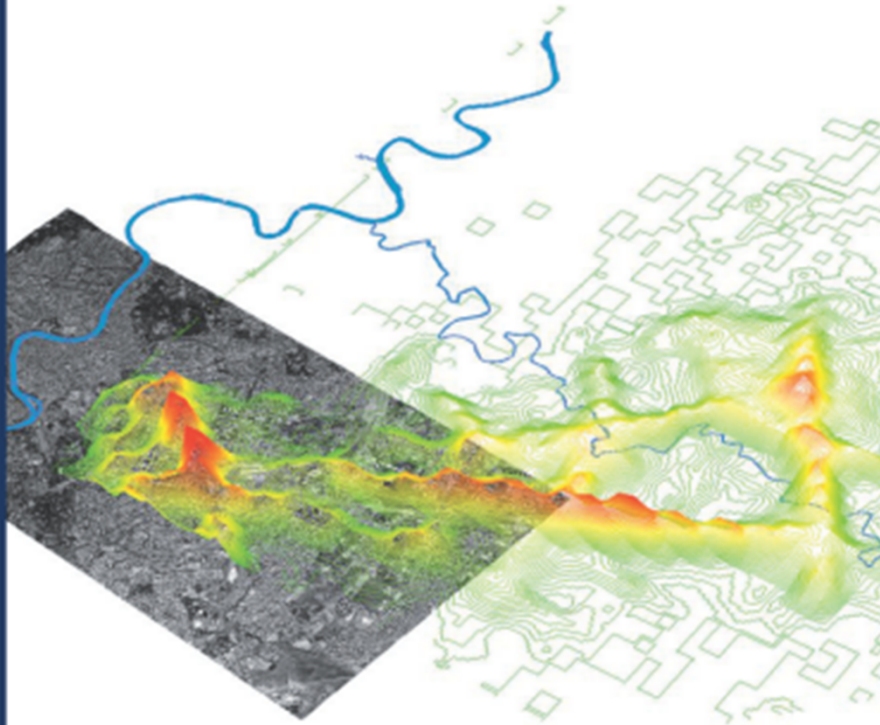
**↑ Informedness → Performance ↑**



- New perspective on the use of advanced IT and enriched information to make informed decisions
- In the presence of improved informedness, firms can:
  - Identify (un-)under-served consumer segments.
  - Deliver services that suit consumer preferences.
  - Move from 'fat spot' to 'sweet spot'.

TING LI

# Informedness and Customer-Centric Revenue Management



**Thank You!**

**Ting Li**