FAILURE TO LAUNCH

WHY MOST MARKETERS ARE NOT JUMPING ON THE AGENT-BASED MODELING TRAIN

David Bakken
Presented at CCB 2014
October 31, 2014
One market researcher’s path to ABM

$50 MM?  $150 MM!
One market researcher’s path to ABM
One market researcher’s path to ABM

• A/R/T Forum circa 2002
• Sometime between 2002 and 2005—I discover NetLogo
• A/R/T Forum 2005. Roger Parker (then of Boeing) and I present a half-day tutorial on Agent-based simulation.
• ESOMAR Congress, 2005. Roger Parker and I present “Predicting the Unpredictable: Agent-based Models for Marketing Research”
• Sawtooth Software Conference, 2006. “Agent-based Simulation for Improved Decision-making”
• A/R/T Forum 2012. Computer Simulation Tutorial
What do I mean by “failure to launch?”
New technology is adopted when:

- The technology solves an important problem
- Potential users are aware of the technology
- Potential users understand how it works (or at least believe that it does what it claims)
- The technology is “accessible”
  - Affordable, compatible with current situation, easy to use
- The technology offers comparative advantage over other solutions
Does ABM solve an important problem for marketers?

After McFadden, 1973
How does ABM measure up?

- The technology solves an important problem
- Potential users are aware of the technology
- They understand how it works (or at least believe that it does what it claims)
- The technology is “accessible”
  - Affordable, compatible with current situation, easy to use
- The technology offers comparative advantage over other solutions
So—where are the ABM applications in marketing?

• Marketing mix modeling?

• Adoption and diffusion of new products/technologies?

• Understanding complex, evolving markets (e.g., technology disruption)?
Bass adoption and diffusion model

- Most durable goods forecasting models based on Bass (1969) new product diffusion model
  - Sales are function of innovation *and* imitation
  - Requires many assumptions (e.g., no supply constraints)
  - Parameterization usually requires in-market data
- Many dissertations based on minimizing assumptions in the model!
Bass model simplifying assumptions

- Market potential (maximum adoption) remains constant over time
- Diffusion of one innovation is independent of all other innovations
- Marketing actions do not affect the diffusion process
- No supply restrictions
- Consumer heterogeneity is ignored
AFV market model

External Factors
- Fuel prices
- Tax incentives
- Infrastructure
- Yikes!!!

Market Information
- Advertising
- MPG, price

Product Attributes
- MPG, price

Perceptions
- Word of mouth

Preferences
- Choice model

Need State

Market Constraints
- Affordability barrier
- Available supply

Market Behavior

Consumer “Black Box”
AFV Model of consumer search and decision process

1. Select potential buyer at random
2. All respondents in choice simulator
3. Is time in market <= search duration?
   - No: Stay in market until purchase or max search
   - Yes: Pick brand at random
4. Brand in consideration set?
   - No: Advertising and WOM
   - Yes: Calculate utility for brand
5. Brands remaining?
   - No: Purchase and become WOM "sender"
   - Yes: Calculate purchase probabilities
6. Does at least one brand exceed "none"?
   - No: Stay in market until purchase or max search
   - Yes: Seller’s current price offer
So, where is the ABM “sweet spot” for marketing?
So, where is the ABM “sweet spot” for marketing?

- Strategic decisions (white space, entering new markets)

- Social diffusion (imitation, word of mouth)

- Interactions (among agents and between agents and environments) are unobserved and stochastic

- The market system is truly complex and adaptive
But challenges remain…

• Low level of awareness and understanding of ABM

• High level of abstraction

• Validation

• Ease of use (from the marketer’s perspective)
Thank You!