

CREDIT CARD MARKET SIMULATION: QUANTIFYING THE IMPACT OF CHANGE LEADS TO DRAMATIC STRATEGIC INNOVATION

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Presented by:

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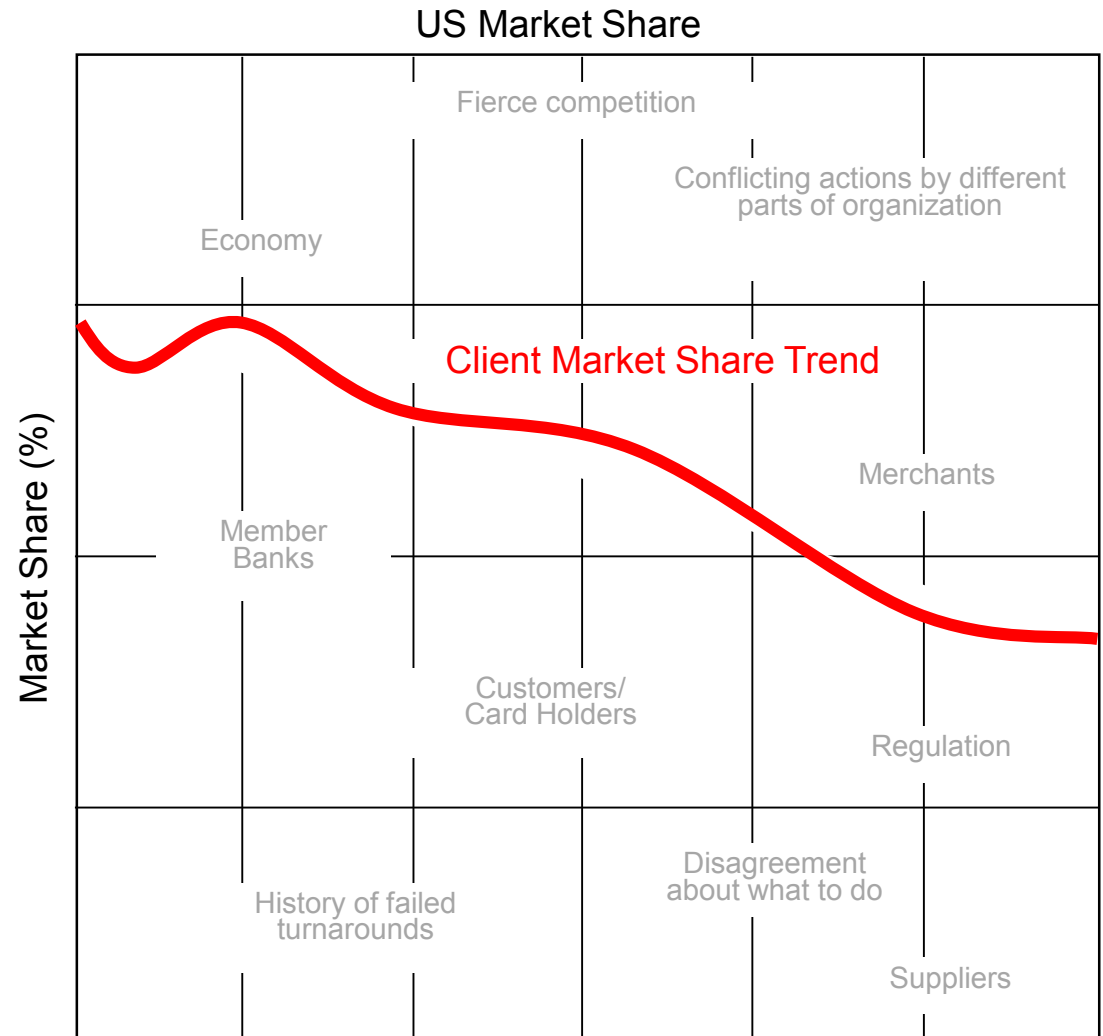
Hosted by:

Steve Adler, IBM & Karim Chichakly, isee systems

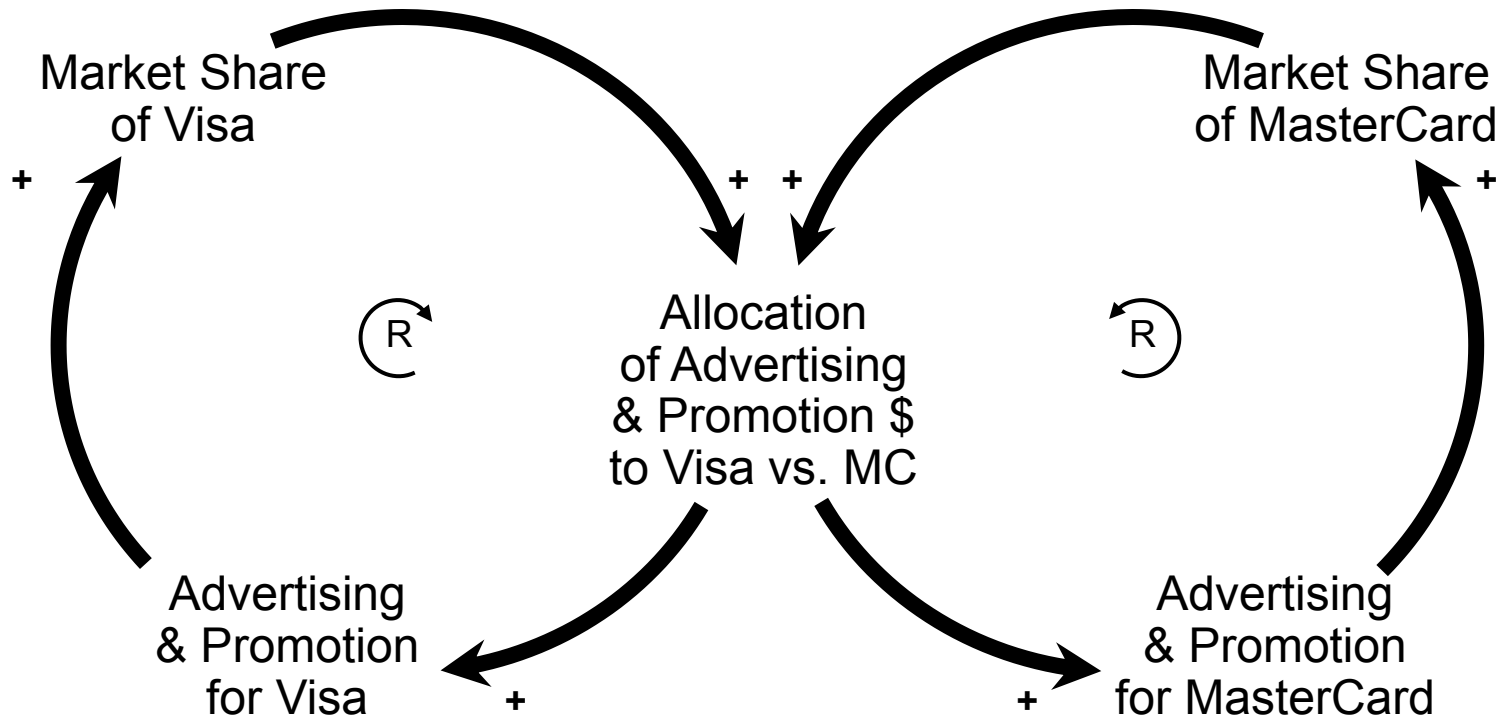


The Problem: The client was losing market share despite many attempts to turn it around...

- Share erosion persisted for 6 years despite numerous attempts to diagnose and solve the problem
- Conventional wisdom wasn't working: "I've been doing this for 20 years and I know this business"
- Initiatives taken in one part of organization were being thwarting by other parts of the organization
- **The Fear:** A "Death Spiral" would ensue if they lost too much market share -- putting the organization out of business

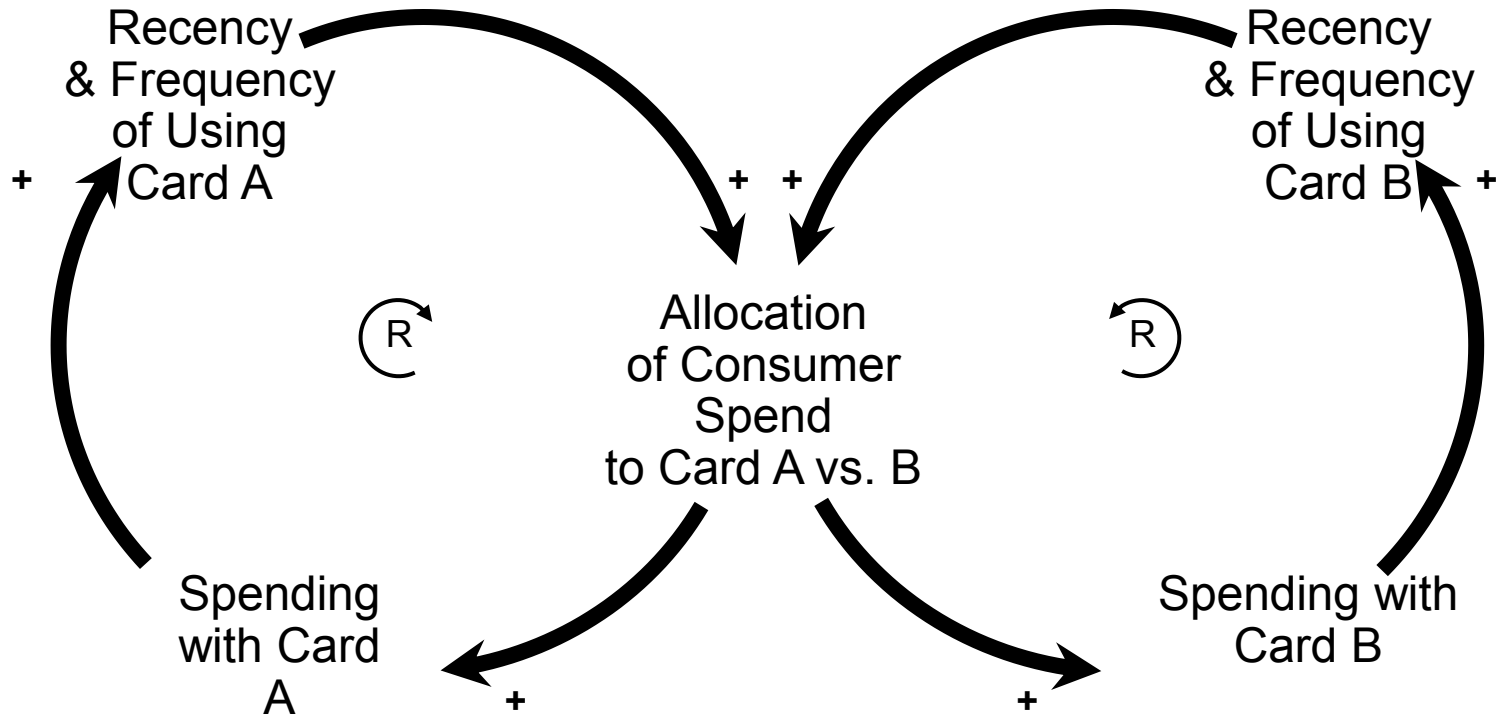


Sample market dynamics: If one bank card association has a greater market share, issuers tend to focus advertising on that company, further increasing market share



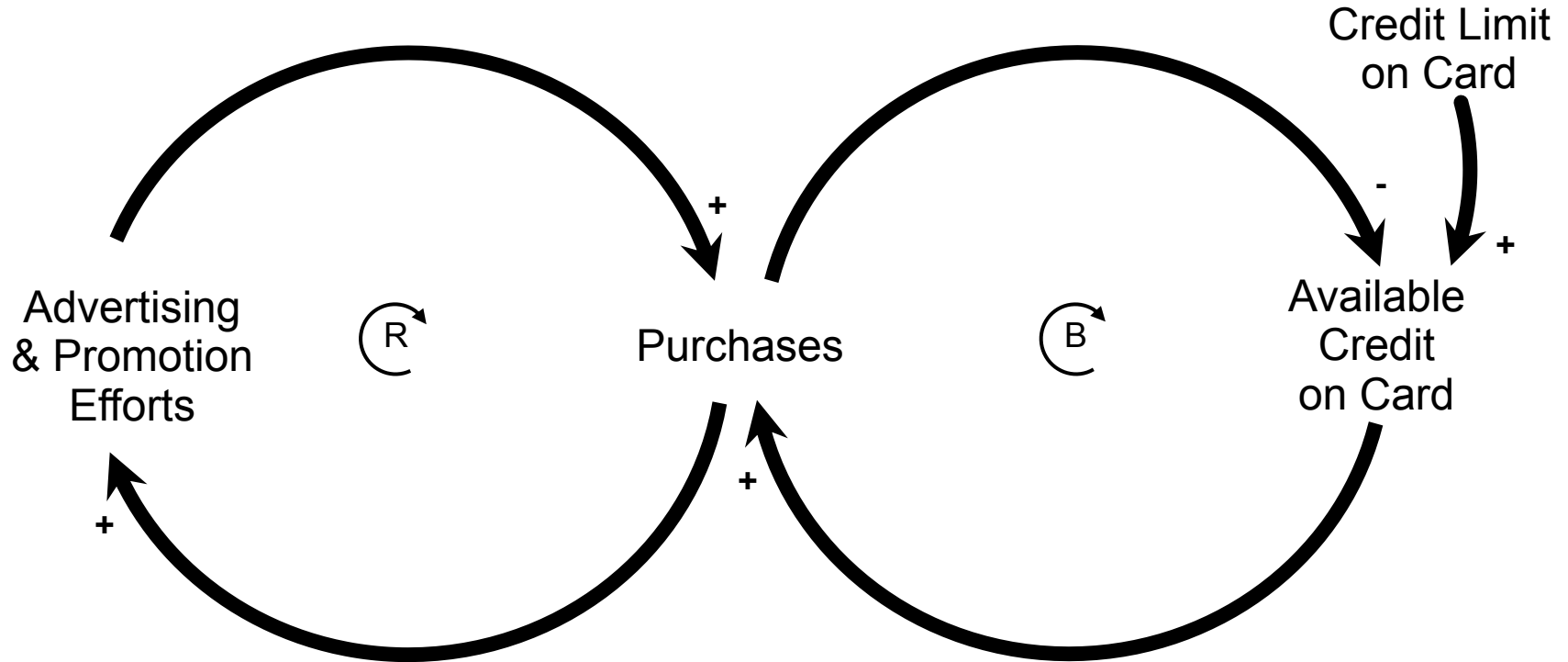
Two reinforcing loops and an example of the 'success to successful' archetype

Sample consumer dynamics: If an individual has recently used a particular card in their wallet they are more likely to use the same card again



Consumers use the card they have most recently used (because it is at the top of the wallet, to make only one monthly payment, etc.) thereby reinforcing the use of the most recently used card

Sample consumer dynamics: While advertising and promotions will increase purchases, card usage will slow as credit limits are approached



An example of 'limits to success' archetype

Non-intuitive finding: increase minimum monthly payments and cardholders will use their cards more

The simulation model design and data was derived from a variety of information and sources

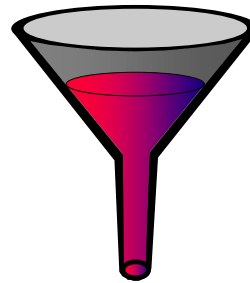
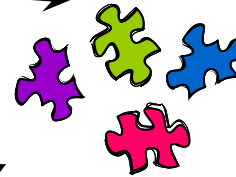
Real World Experience

- *First hand experience and intuition of executives and employees*
- *Similar historical situations in other industries*
- *Knowledge of operations & procedures*

Qualitative Assessments

- *Industry reports and surveys*
- *“Diplomatic” considerations and game theory assessments*
- *Academic studies on the industry*

The information was synthesized, cross-checked, and used to iteratively develop and refine a dynamic hypothesis of the underlying structure – the cause and effect relationships that drive behavior over time

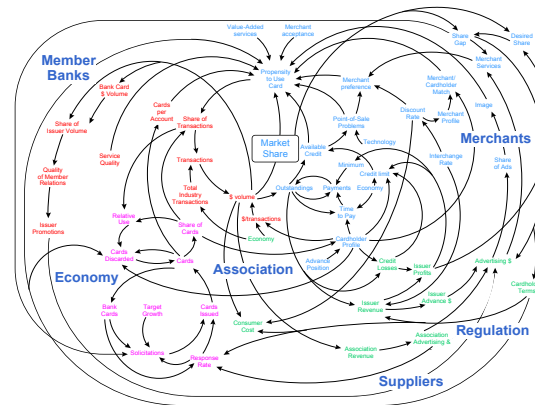


Quantitative Analyses & Measures

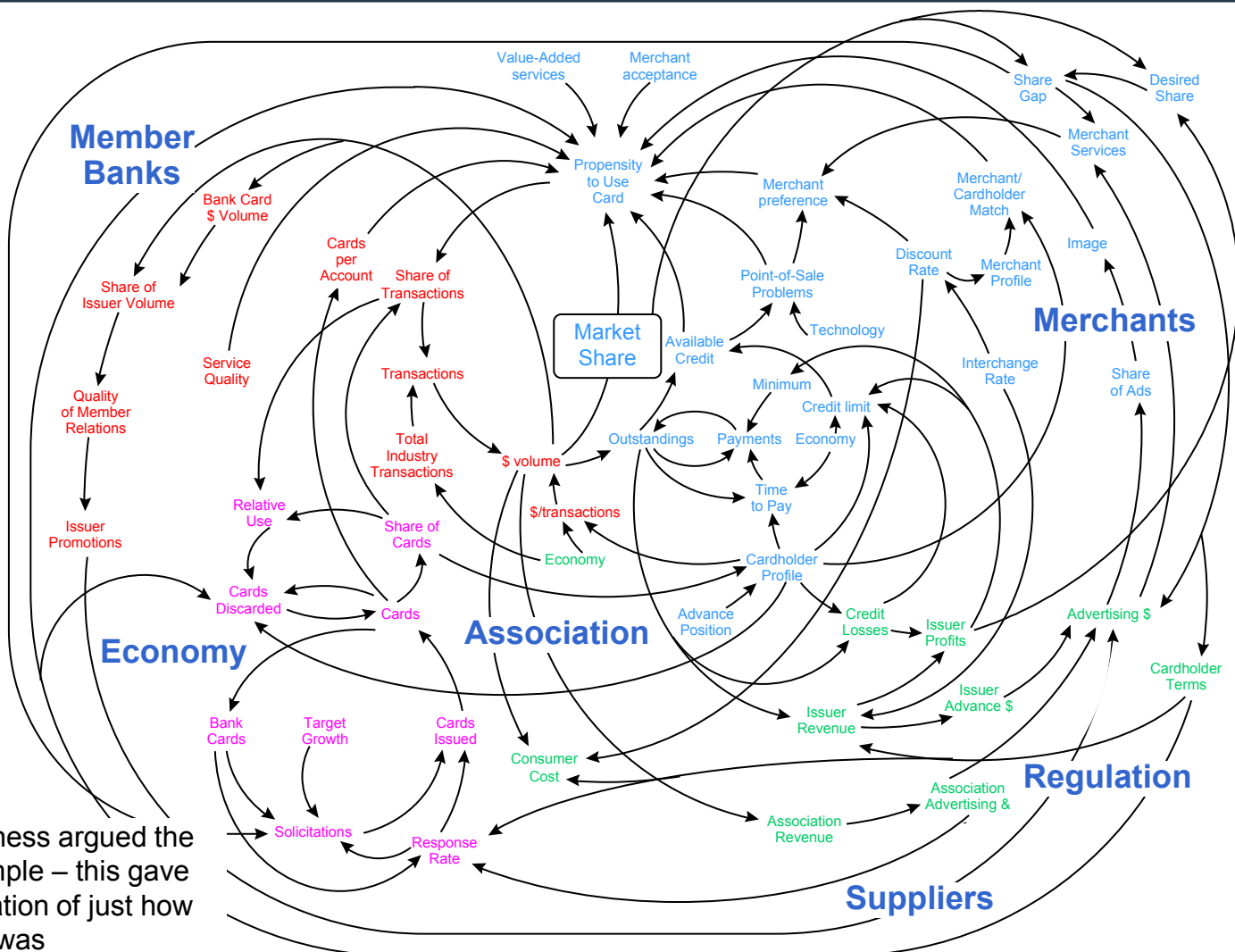
- *Historical data*
- *Other modeling efforts (often narrower in focus with more detail)*
- *Indicators and other sources of actual measures*

Understanding of Context / Cultural Factors

- *Regulatory constraints*
- *For the international work -- country-specific historical and cultural studies*
- *Social science experts and literature*
- *First hand local input from employees in Germany, Japan, and the UK*



The first simulation model focused largely on our client's business dynamics



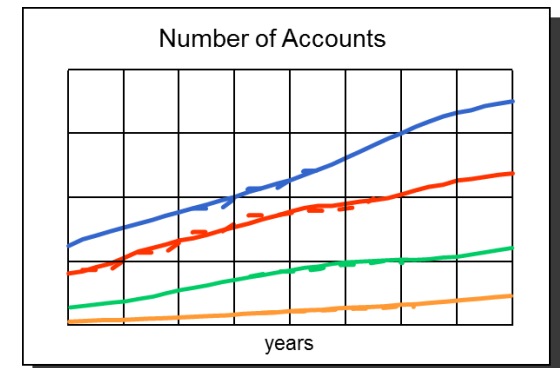
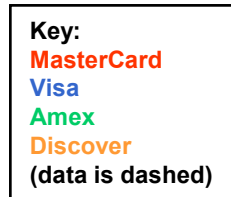
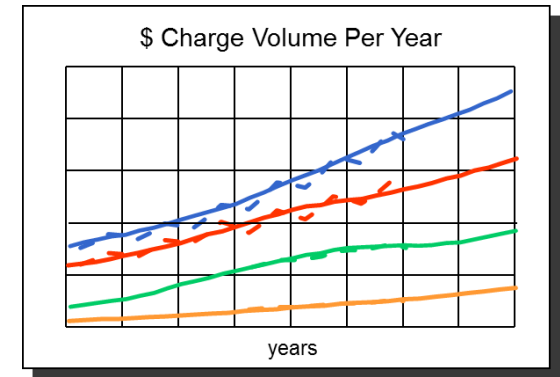
Many in the business argued the business was simple – this gave them an appreciation of just how complex it really was

The simulation model was calibrated to a variety of historical data

What kind of data was collected for the competitors?

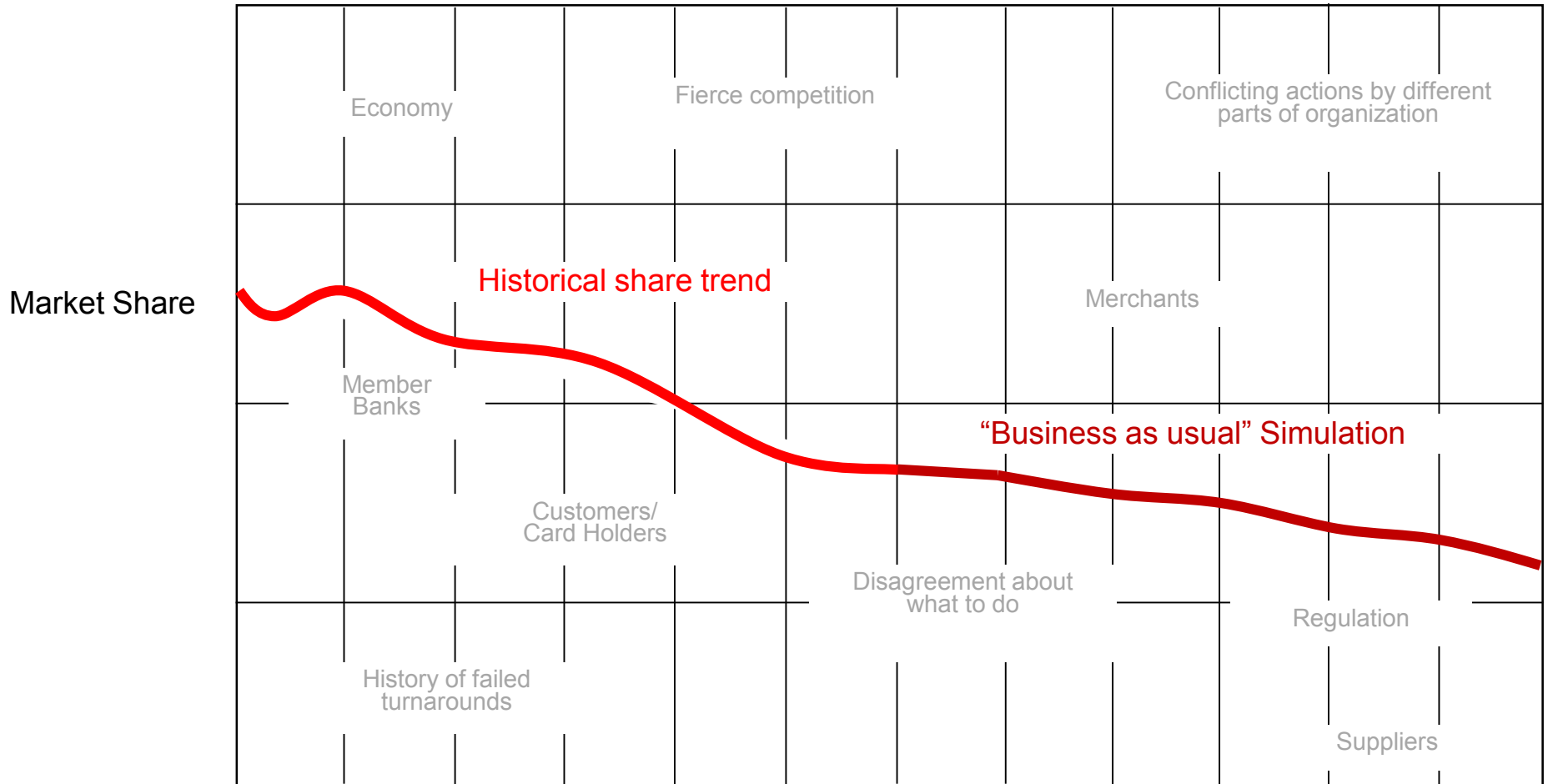
- Gross \$ volume
- Number of cards
- Gross transactions
- Outstanding's balances
- Gross payments
- Net charge offs, credit losses & fraud losses
- Gross \$ cash advances
- # of cash advances
- Total card accounts
- Active card accounts
- % of accounts w/ outstanding balances
- Average outstanding per account with a balance
- Average credit limits
- Delinquencies
- Member assessments / service fees
- Merchant acceptance rates
- Corporate revenues and expenses
- Advertising expenses
- Card company and association profitability
- Acquiring bank revenues, expenses, profitability
- Acquiring bank interchange expense
- Issuing bank revenues, expenses, profitability
- Issuing bank charge offs / losses / fraud
- Advertising spending by brand (issuers and associate/corporate)
- Number and share of total mailings and solicitations
- Response rate to solicitations
- Average cash advance
- Gross \$ cash advance
- # of cash advance transactions
- etc.

Sample Model Calibration Plots



The “Business As Usual” simulation showed that without major intervention our client’s share would continue to fall

US Market Share (all competitors)



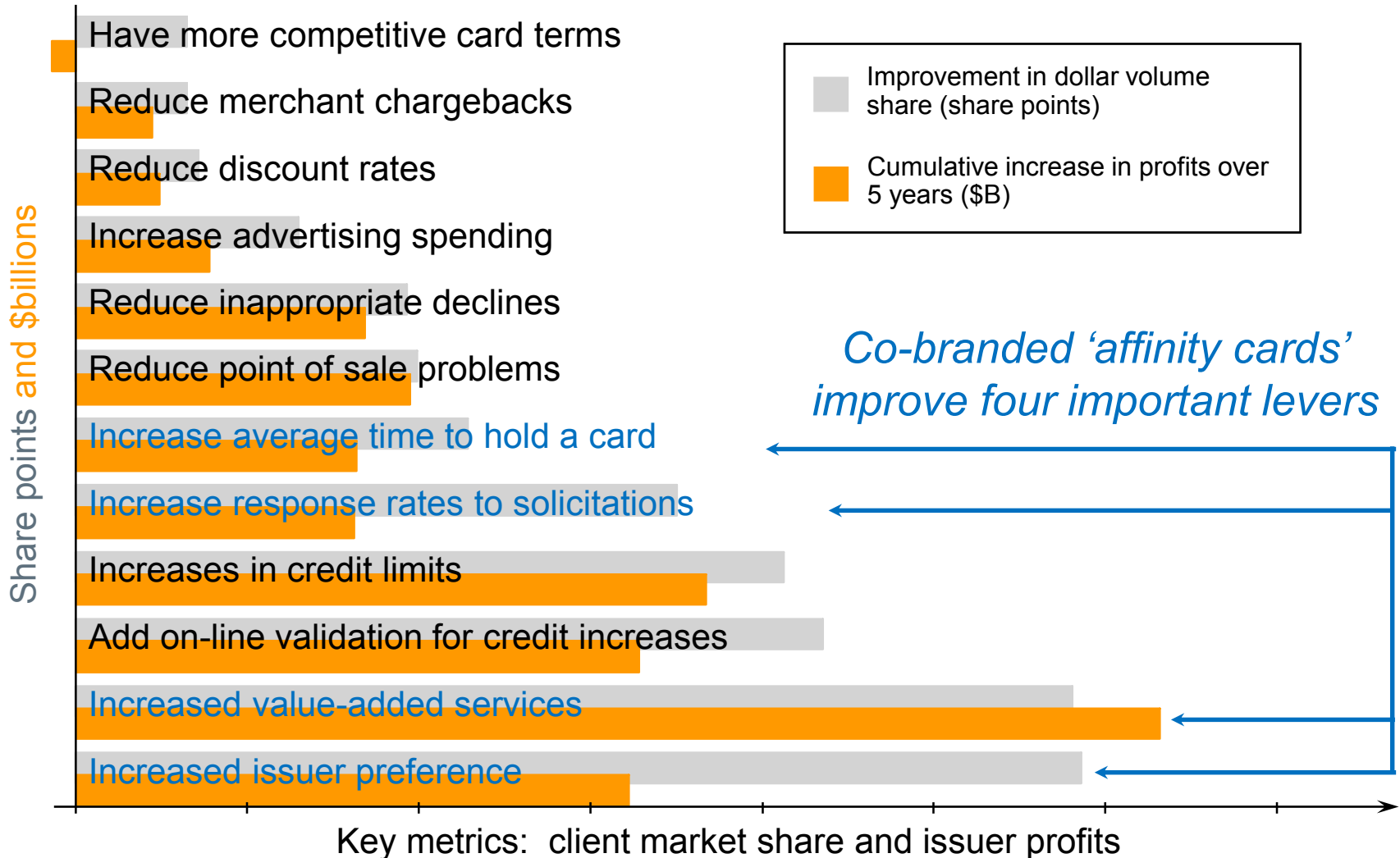
First we tested the initiatives the organization had recently undertaken, or was considering. None of these reversed the loss of share.



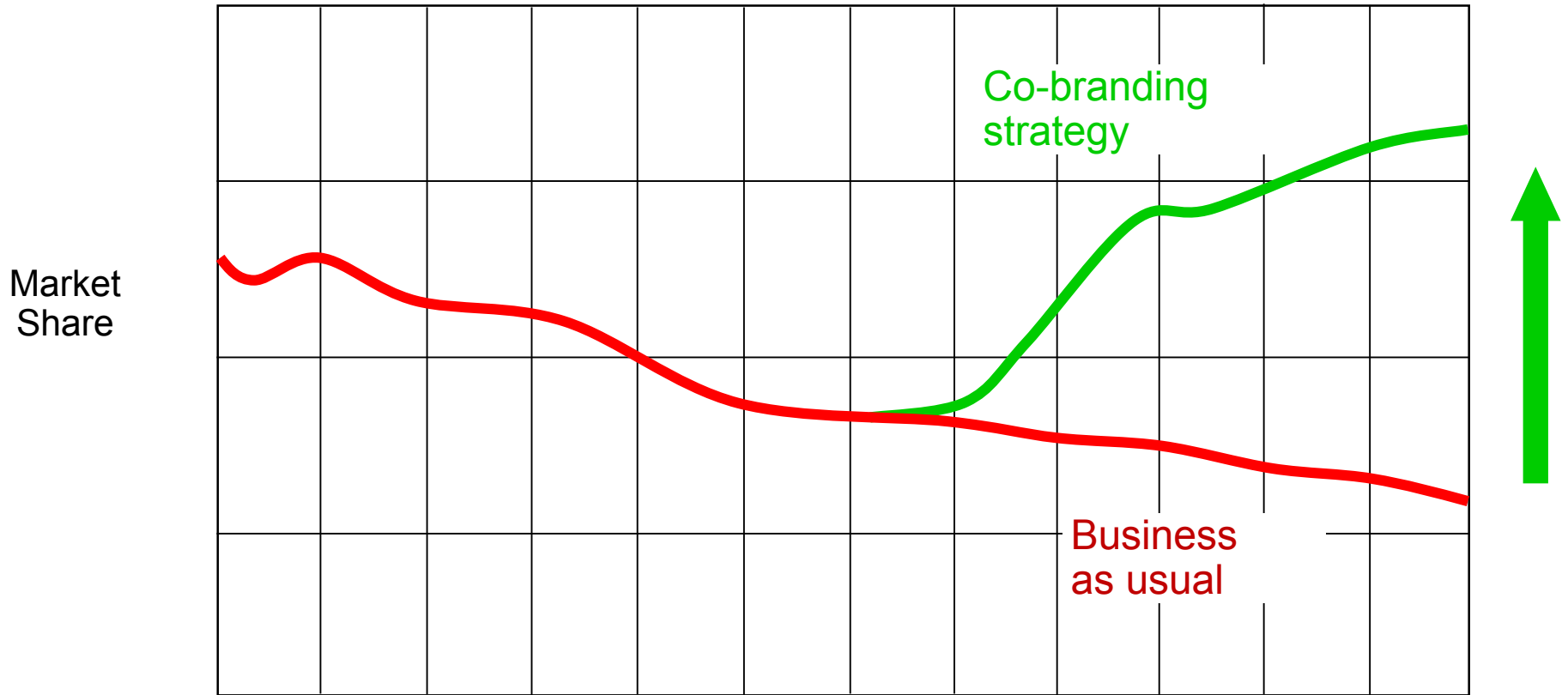
We then executed a thorough set of sensitivity tests, varying most of the parameters in the model by plus or minus 25%



Simulation pinpointed sensitivity to different business levers

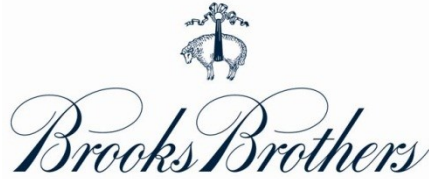


Our client was first to market with co-branding. Their market share increased by six percentage points.



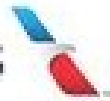
System Dynamics analysis helped assess the many direct and indirect effects of different strategic choices and quantified the benefits of dozens of possible changes and combinations

Co-branded cards transformed the US credit card industry. Sample co-branded credit cards



ANN TAYLOR

American Airlines



BARNES & NOBLE



U.S. AIRWAYS



Why System Dynamics was helpful in this case

The model represented the way whole business works:

- Interaction among internal functions
- Competitor actions and reactions
- Economic and demographic impacts

Built on existing work

- Used results of other company models as inputs
- Used a wide range of industry data

Represented cause and effect relationships, employing all forms of information:

- Linkages between parts of the system
- Soft factors such as brand awareness, reputation, etc.
- Decisions rules rather than specific decisions

Quickly simulated how the entire business and market performed under a wide range of “What-if...?” questions:

- Less input-intensive once developed
- Fast simulation time
- Built-in analysis and comparison capability

Provided more robust mid-to-long-term predictive accuracy:

- Dynamic feedback
- Decision rules
- Breadth of model

Helped to build confidence in, and commitment to, change:

- A mechanism for management participation
- Stimulates discussion of strategic issues

System Dynamics helped the client understand the causes of the problem and determine the consequences of alternative courses of action

APPENDIX

Speaker Bios



David Starr: Dave has been the CIO of three Fortune Five Hundred companies, advisor to two U.S. Presidents, rated #1 CIO in the country twice, and is a former member of the Board of Directors of Best Buy Corporation. He is currently working with Cooper Human Systems using System Dynamics to build life science models. David has a bachelor in Physics from Florida State, and has studied at Harvard Business School and Duke University.

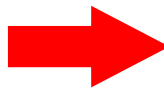


Sharon Els: Sharon has specialized in business modelling and simulation for over twenty years. Her client work has included: assessing emerging strategic issues and options, optimizing corporate resource allocation, delivering projects on time and on budget, and resolving large contract disputes and predicting market changes and evolution. She has consulted to a number of financial, technology, and defense firms in the U.S. and Europe including Pfizer, 3Com, Boeing, Raytheon, AT&T, Pepsi, the US Navy and the US Marine Corps. Sharon holds a bachelor's degree in Civil Engineering from MIT, and an MBA from MIT's Sloan School.

Later the work was expand to evaluate international markets

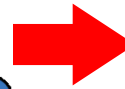
Stage 1:

Understanding Key Client Dynamics



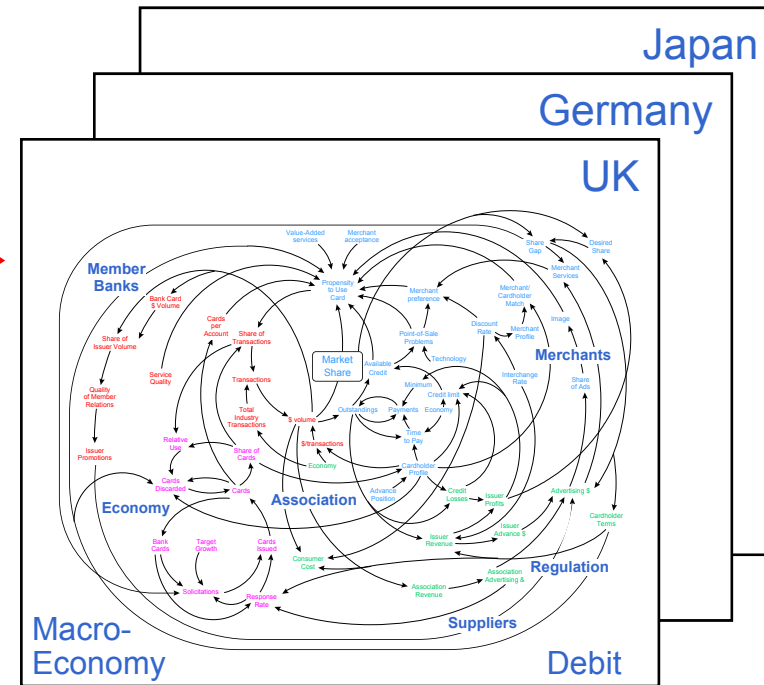
Stage 2:

Analyzing US Market Strategy Options



Stage 3:

Analyzing Strategies in Different Countries (e.g., UK, Germany, Japan)



Client Executive: “We are often investing in initiatives that are thwarted by other actions the organization is pursuing”

Client Executives: “How can we better compete in this market place?”

Client Executives: “What should we be doing differently overseas?”