



MIT Center for Transportation & Logistics

Supply Chain Management: Driving Strategic Advantage

Program Review
MIT CTL Exec Ed Program
June 16, 2017



SC Management: Driving Strategic Advantage

- Tuesday:
 - Introduction & Ice Breaker
 - Halloran Metals Case Discussion: Jonathan Byrnes
 - Beer Game: Chris Caplice
 - Beer Game Debrief: Jim Rice
 - Journal
 - Reception at Champions (Marriott)
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- Wednesday:
 - Supply Chain Financial Analysis: Jarrod Goentzel
 - Sun Nutraceutical Working Capital Simulation
 - Supply Chain Risk Management: Jim Rice
 - SC Resilience SCREAM Exercise: Josué Velázquez
 - Wal-Mart Case Discussion: Jim Rice
 - Journal
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SC Management: Driving Strategic Advantage

- Thursday



- SCREAM Debrief: Josué Velázquez
- Omni-Channel Distribution: Eva Ponce
- Future Freight Flows: Chris Caplice
- SCM Info on recruiting: Sue Wang
- Apple Case Discussion: Jim Rice
- Global SC Business Simulation: Jarrod Goentzel
- Journal

- Friday



- Global SC Simulation Debrief: Jarrod Goentzel
- Sustainable Supply Chains: Josué Velázquez
- Digital Disruption: Jeanne Ross
- The Future of Supply Chain Mgt: Yossi Sheffi
- Journal & Summary

Icebreaker



- This is your new network!
- Who is a good dancer? (Or so they say).
- First trip to the US?
- Vegetarian?
- Only child?
- Loves to shop?



Halloran Case

- Does Halloran have a strategy?
 - Is it a good strategy?
 - Ask your customers
 - “Why do you buy from us?”
- Allied & Halloran
 - Distinct strategies, competing in different ways
 - Both can be successful
- Strategy
 - Deciding what you WON’T do!
- Alignment is critical
 - The supply chain must serve the business strategy



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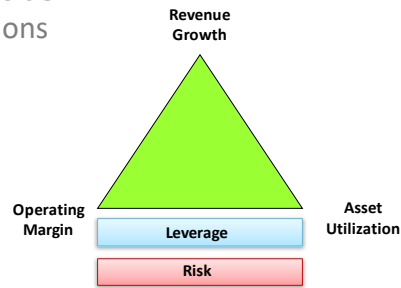
The Beer Game

- Playing the Game
 - Mayhem, limited data, uncertainty
 - Similar to the real world
- Debrief
 - Tendency to respond to events
 - Events → manifestations of patterns
 - But 10x improvement possible!
 - Key patterns found in SCs
 - Oscillation, Amplification, Phase Lag
 - AKA the Bullwhip Effect



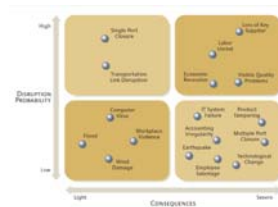
Supply Chain Financial Analysis

- Sunflower Nutraceuticals: distributor with thin margins, flat sales, and capital constraints.
- Identify the levers for the CEO to “fly the plane”
- Assess the levers (ratios) and consider tradeoffs to make business decisions
 - DuPont Analysis
 - WACC of cost to borrow
- Balancing
 - Margin
 - Revenue Growth
 - Asset Utilization



Supply Chain Risk Management & Resilience

- Low probability/high impact disruptions
- Failure mode focus – prepare for predictable outcomes – lost capacity to:
 - Acquire materials
 - Ship/transport
 - Communicate
 - Convert
 - Human resources
 - Financial flows
- Flexibility & Redundancy
- Many paths to flexible SC
 - Interchangeability, Postponement, Flexible Supply, Flexible Distribution, Flexibility culture



Adding Resilience to a Supply Chain

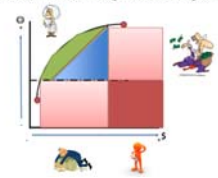


SCREAM Exercise

- Not all Sunny dayschoosing one policy for multiple scenarios
- Multiple ways to protect, at diff costs
 - Different policies do well under different scenarios
 - Understanding the right scenario portfolio is key
- Downstream matters more
 - Protecting the DC is more important than protecting the plant or the supplier
- Combination of Robustness & Flexibility
 - Typically most reasonable approach is mixed
 - Robustness to cover the Response Time for Back Ups
 - Flexibility (backups) relied on for longer term



Assessment of mitigation strategies



Wal-Mart Case

- The world's most efficient supply chain
- Partnerships upstream
- Innovation and data integration aligns and informs the supply chain
- Data analytics – RetailLink
- Network of 8500 stores and 150 DCs
- But...threatening competitors, flagging same-store sales
- Can Wal-Mart's efficient supply chain be used to compete:
 - As an e-commerce provider?
 - In small-store format?
 - Internationally?



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Omni-Channel Distribution

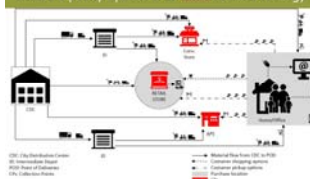
- Succeeding amidst the chaos!
- Main challenges
 - Where to prepare the orders?
 - Where should the order meet the customer?
 - How does the order meet the customer?
- Integrating capabilities
 - End-to-end SC solutions
 - Inventory visibility
- Commercial returns
 - Return rates can be 35% to 40%
 - Returns as opportunities for new sales



On the way towards an omni-channel



Different pickup options in an omni-channel strategy



Future Freight Flows

- Four Future Freight Flow Scenarios
 - Naftastique!, Millions of Markets, Global Marketplace, One World Order
- Digital Freight Marketing
 - Uber for freight? → Fit: Local real-time, on-demand delivery
- TMS Trends
 - Shipper decision unchanged, Implementation speed is concern, most have Digital Freight Marketing
- Mobile Communications
 - Real-time tracking? E-Log books? Transparency?
- Autonomous Vehicles
 - From “If” to “What, When, Where, & How”



Apple Case

- Stock price down 25%
- No blockbusters on horizon
- Can they still produce blockbuster products without Jobs?



- Highly responsive supply chain
 - Rapid ramp for blockbuster products
 - Creates and responds to the Bullwhip
 - Control throughout the supply chain
 - Suppliers get investments but no freedom
- Can Apple's supply chain compete on cost?



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Global Supply Chain Simulation

- Design, forecasting, procurement, production planning to make money and keep board happy
- Accurate forecasts
 - Gather more data, especially individual forecasts
 - Capture the standard deviation of the individual forecasts
 - A small amount of pre-launch information or actual demand can really improve forecasts
- Responsive supply
 - Structurally aim to shorten lead times and increase reactive capacity
 - Consider which products to produce with speculative/reactive capacity
- Appropriate inventory*
 - There are incentives to produce more or less than the forecast
 - Critical Ratio based on the cost of being under/over (e.g. stockout or markdown cost) can be used to set appropriate inventory/service levels

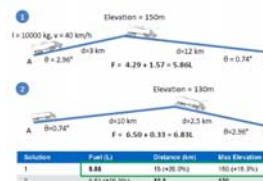


* These relate to newsvendor problem. Contact Jarrod for more details and application....



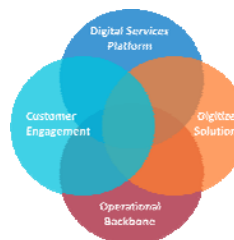
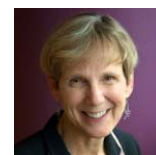
Sustainable Supply Chains

- Revisit decision-making models (e.g. facility location problems) that were designed under assumptions more suitable to the US and Europe environments.
- Specific characteristics of retail distribution in large urban areas may lead to structurally different logistics models.
- Companies may use Sustainable Facility Location model to trade-off cost and CO2 when deciding facility location.



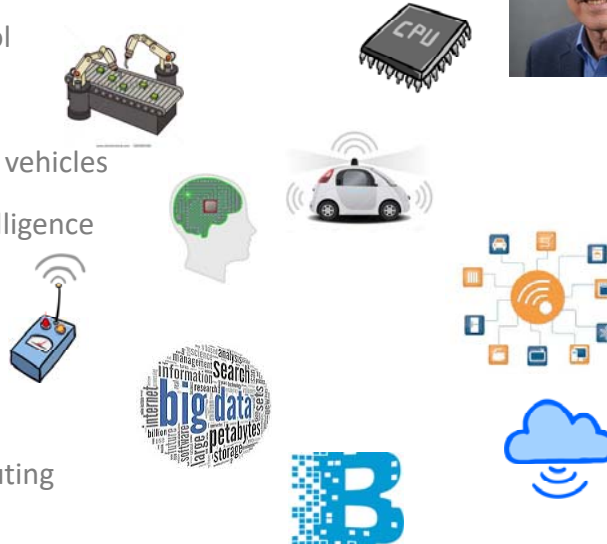
Turning Digital Disruption into Competitive Advantage

- SMACIT
- Clear vision is essential to digital success
- Two choices for digital strategy
 - Customer Engagement
 - Digitized Solutions
- Digitized → Digital
- Four components of digital strategy
 - But operational backbone is not enough
 - Must build Op Backbone AND a Digital Services Platform



Future of Supply Chain Management: ICT Advances with SCM Applications

- Digital control
- Robotics/3D
- Autonomous vehicles
- Artificial intelligence
- IoT
- Sensing
- Big data
- Cloud Computing
- Blockchain



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Today you leave with.....

- A tool set of frameworks and methods for thinking differently about designing and running your supply chain/supply network,
- Many illustrations of these methods with examples of the great potential
- Some insights into the future challenges for firms
- A new network of contacts

How will you apply these learnings?



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Thank you.....

- For investing your time with us
- For engaging so actively

- For giving feedback
 - Your input helps us revise to improve
 - Takes ~7 minutes

- For telling others about your great experience
- For sending colleagues to future exec ed programs
- For considering our Supply Chain Exchange

