

IOWA STATE UNIVERSITY

Department of Industrial and Manufacturing Systems Engineering

Lunch and Learn with General Mills

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Resume

- Assistant Professor, Industrial and Manufacturing Systems Engineering, 2015 – present
- Assistant Professor, Defense Resources Management Institute, 2012 – present
- PhD in Industrial Engineering, 2012
- MS in Management Science and Engineering, 2009
- Senior Associate, The Cohen Group, 2003 – 2006



Research focus

- Decision and risk analysis
- Relevant topics to General Mills
 - Supplier selection
 - Contamination in agriculture supply chains
 - Supply chain disruptions and resilience

Supplier selection

STEP 1: Form objectives hierarchy with KPIs derived from the SCOR metrics

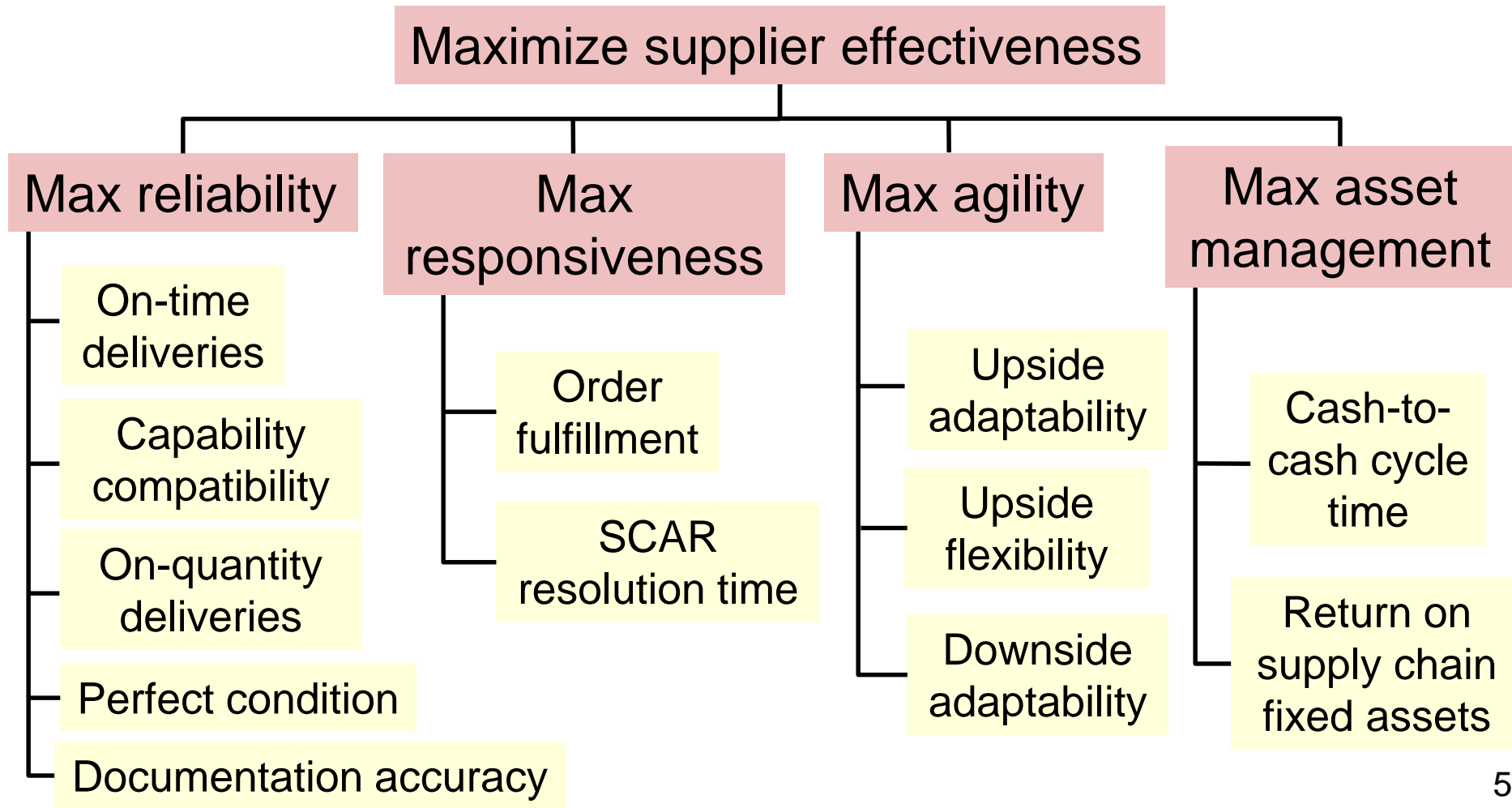
STEP 2: Form value functions

STEP 3: Assess trade-off weights

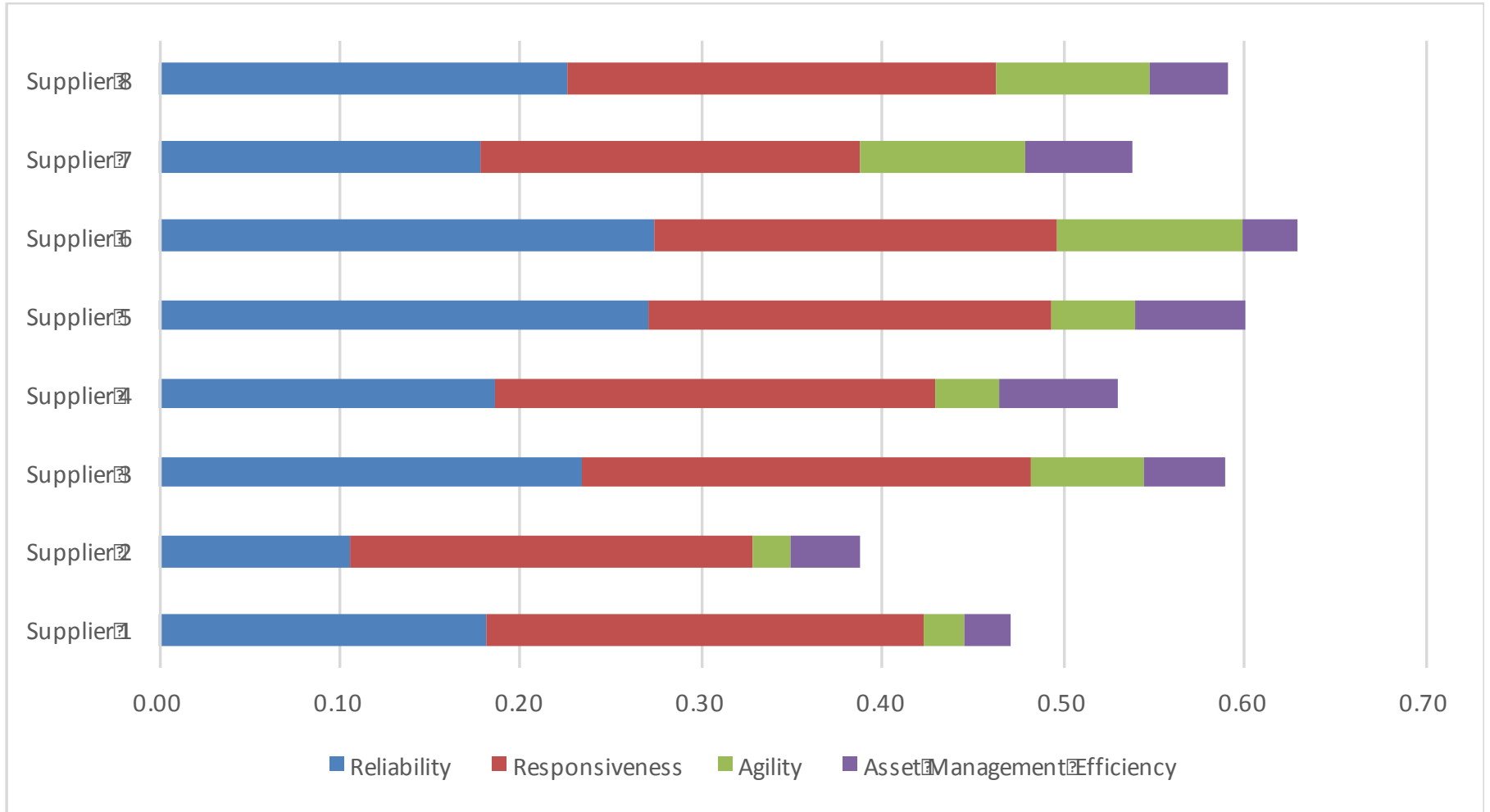
STEP 4: Develop overall measure

STEP 5: Perform cost-effectiveness analysis

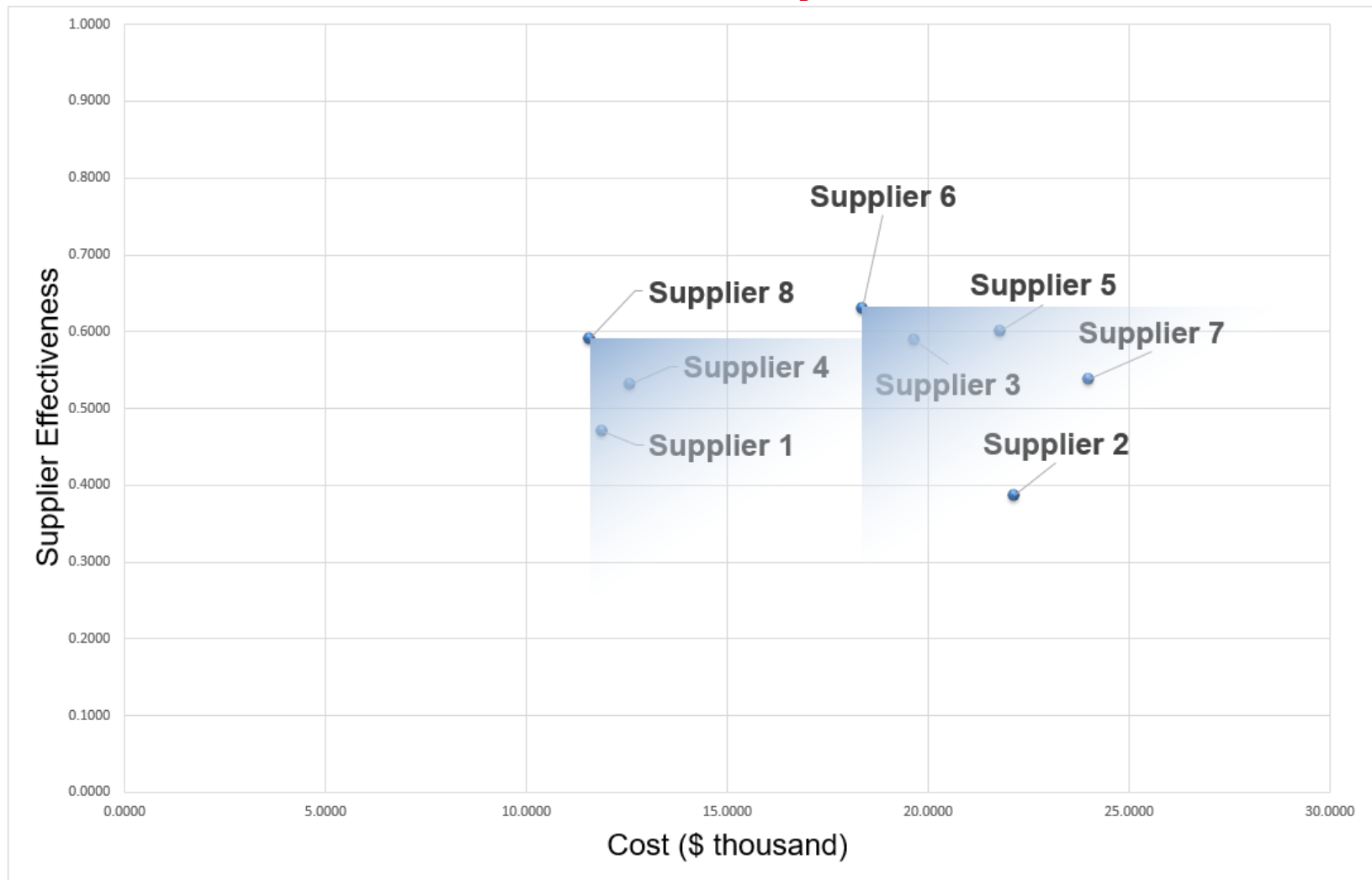
Objectives hierarchy: What do you care about?



Supplier effectiveness



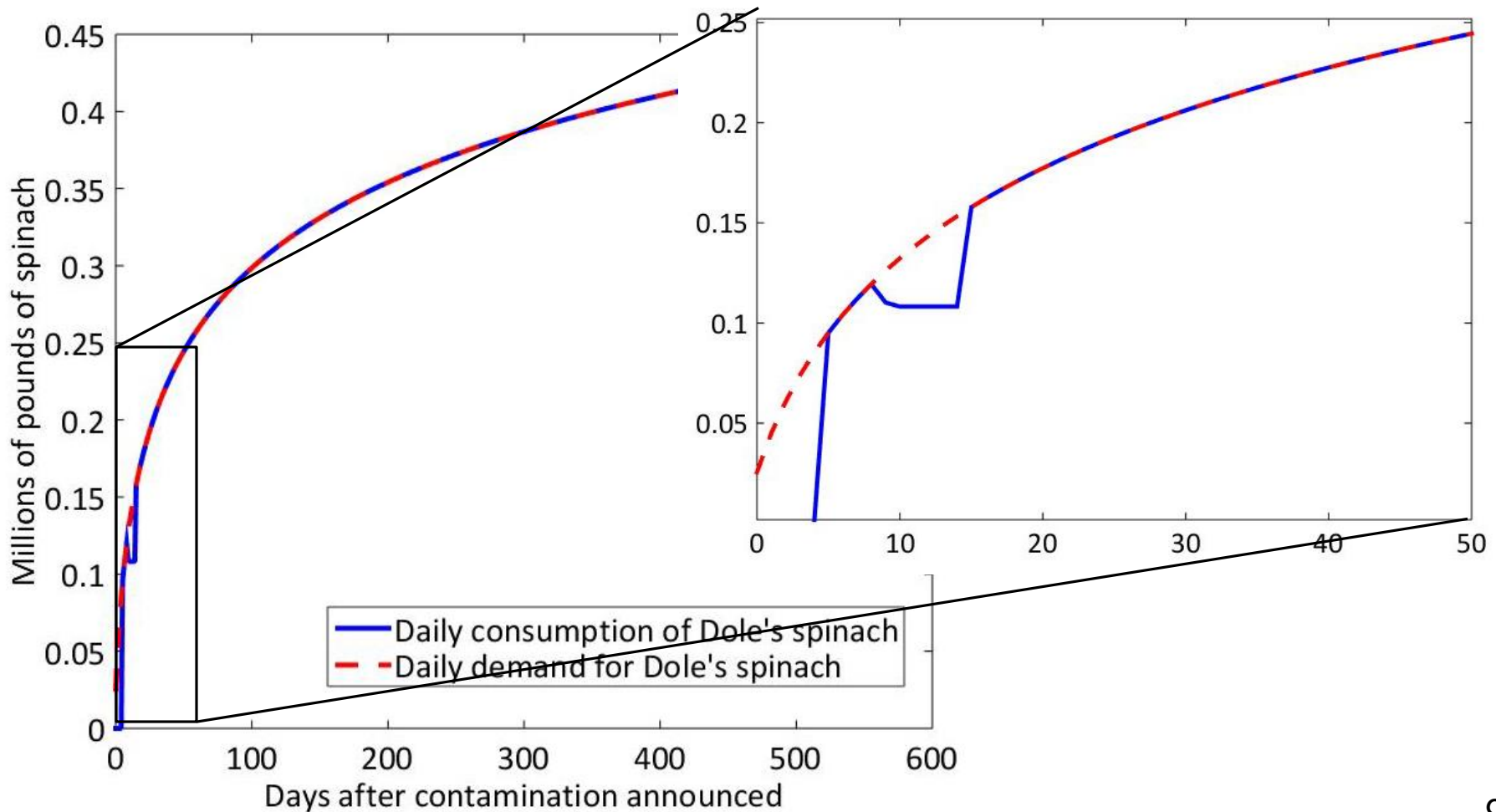
Cost-effectiveness analysis



Contamination in agriculture supply chain

- Previous research modeled how a fresh produce supply chain could manage contamination in the supply chain
- Translate qualitative factors into a mathematical model
 - Traceability, product type, communication, topological structure

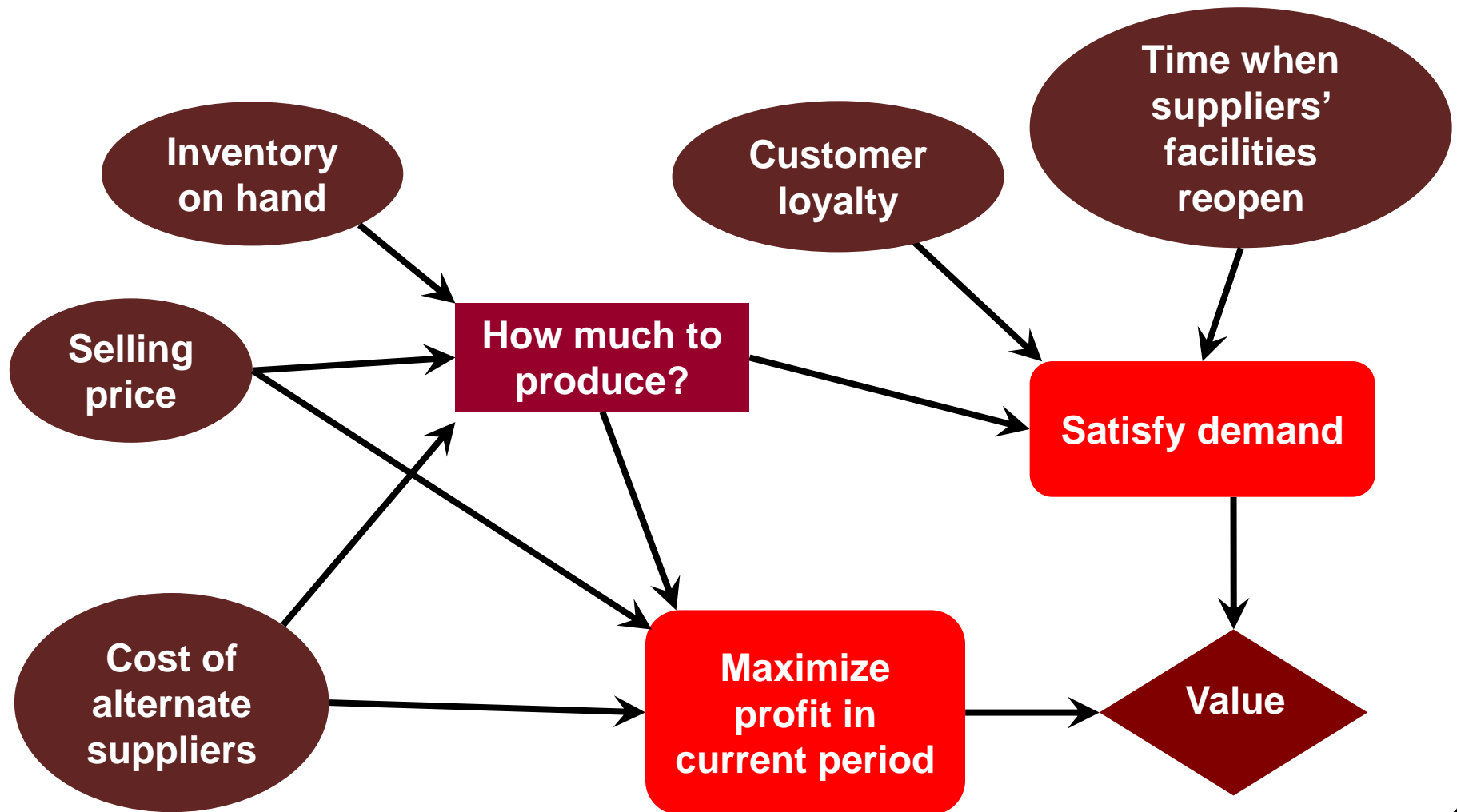
Dole's production of spinach



Future DHS center for cross-border and supply chain threats

- Proposal on livestock disease, in collaboration with ISU's Center for Food Security and Public Health
- Model systemic impacts of animal diseases on food and agricultural supply chains
 - Simulation of disease spread in livestock
 - Model consumer behavior
 - Assess economic and business impacts
 - Integrate model into a decision-making tool

Supply chain disruption and resilience



Supply chain resilience

- Resilience: withstand, absorb, and successfully recover from a disruption to operations
 - Can be related to complexity of the supply chain
- Investigate factors that make a supply chain resilient
- Metrics for supply chain resilience
- How to smartly allocate resources to increase resilience

Questions for discussion

- What concerns do you have in General Mills' supply chain?
- How does General Mills currently select and evaluate suppliers?
- How does General Mills manage risk?
- What type of visibility does General Mills have into its supply chain?
- Do you think mathematical models can be helpful to General Mills in this area?

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