

**29<sup>th</sup> Cambridge International Manufacturing Symposium**

# **Scenario Planning for ‘Operational’ Vigilance and Agility**

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Centre for  
International  
Manufacturing

IfM

**September 26, 2025**

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# Agenda

- Conference theme: “Reconfiguring manufacturing supply chain footprints in a new era of harsh geo-strategic competition”
  - Motivating examples
  - The challenge
- Challenge for the COO/CSCO
  - Why is this particularly challenging for Ops/SC leaders?
  - Going beyond typical scenario application: Tactical planning?
- Case example (in progress)
- Lessons and open questions

# General SC adaptation challenge: Case - Peloton



- Peloton Interactive, Inc. (NYC)
  - 2012: Founded (John Foley, Tom Cortese)
  - 2013: First sale (Kickstarter, \$1500)
  - 2014: First internet-connected stationary bike
  - 2018: First treadmill (CES @Las Vegas)
  - 2019: Revenue \$0.734B; IPO \$8.1B
- Pre-pandemic (Mar 11, 2020)
  - Stock price: \$ 19.72; Market cap: \$6.2B
- First Covid Christmas (Dec 24, 2020)
  - Stock price: \$162.72; Market cap: \$47.6B
  - Revenue (2021): \$3.15 B

Image source: <https://pngimg.com/download/82935>

# Peloton: May 26, 2021 -- Big announcement



- Build **SC agility**
  - Reduce lead time
  - More accurate forecasts
  - Faster response to dynamic market
- Enhance **SC robustness**
  - Less impacted by foreign Covid policies
  - Avoid port logjam

# Peloton factory update at 8 months: Feb 8, 2022



# Reconfiguring SCs for 'geo-strategic competition'



U.S. Department of Commerce

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## Samsung delays \$44 billion Texas chip fab — sources say completion halted because 'there are no customers'

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## Intel delays Ohio chip plant opening to next decade, was supposed to start production by 2026

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# ... and difficulty of SC adaptation is not new



World's largest PC-maker (2006)  
#1 supply chain (AMR 2004, 2005)

Changed supply chain strategy in 2008 because  
**“the environment has changed ... our supply chain needs to change dramatically”** -Mike Cannon, Pres. of Global Ops. (Apr 2008)

US \$ 32 million (1989) →  
US \$ 2500 million (1998)

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**“... rapidly changing book industry, eReader revolution, turbulent economy. We put in a valiant fight, but regrettably, in the end, we weren't able to overcome these external forces.”** - Mike Edwards, CEO of Borders (July 21, 2011 email)

Biggest phone company (2005)  
Sold: 1 billion phones!  
One SKU: 200 million!

**NOKIA**  
Connecting People

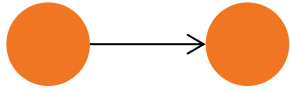
**“We had moments in the past year and a half when we could have done some things differently had we known that the industry was changing so rapidly.”**  
- Stephen Elop, CEO (July 2012)

# The challenge for the COO/CSCO

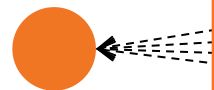
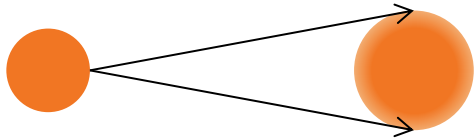
- “Reconfiguring manufacturing supply chain footprints in a new era of harsh geo-strategic competition”
  - Manufacturing supply chain footprints = Durable, rigid
  - Harsh geo-strategic competition = Whimsical, unpredictable
- Other driving forces enhance turbulence
  - Rapid tech advances (e.g., ChatGPT came 4 months after CHIPS Act)
  - Variable economic growth (e.g., Asia)
  - Pressure of environmental concerns (e.g., Net zero, circularity, PFAS)
- Operational cost and responsiveness force short-term attention

# Planning for long-term using Scenario Planning

Today Tomorrow














Next month

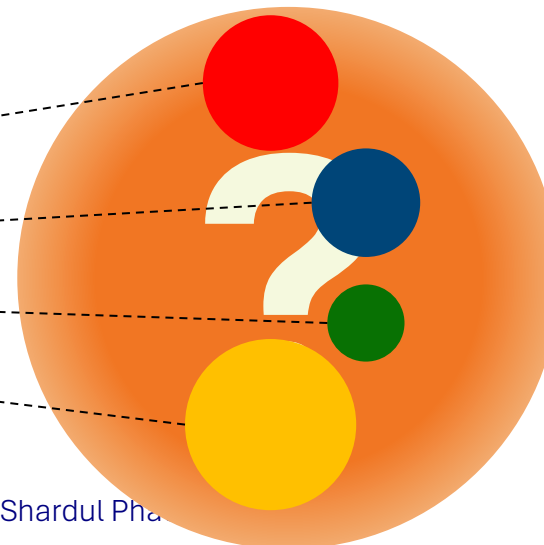


**Foresight, not forecast**  
For preparation and learning

Scenario Planning: Background

1950s	1960-65	1967	1981	1997
	 4 <sup>th</sup> National Plan			
	 			

Years from today



## Key for SC adaptation

- Keep **uncertainty alive** in the organizational mind
- Build **flexibility in SC structures** to adapt to environmental change
- **Recognize** signs of changing environments

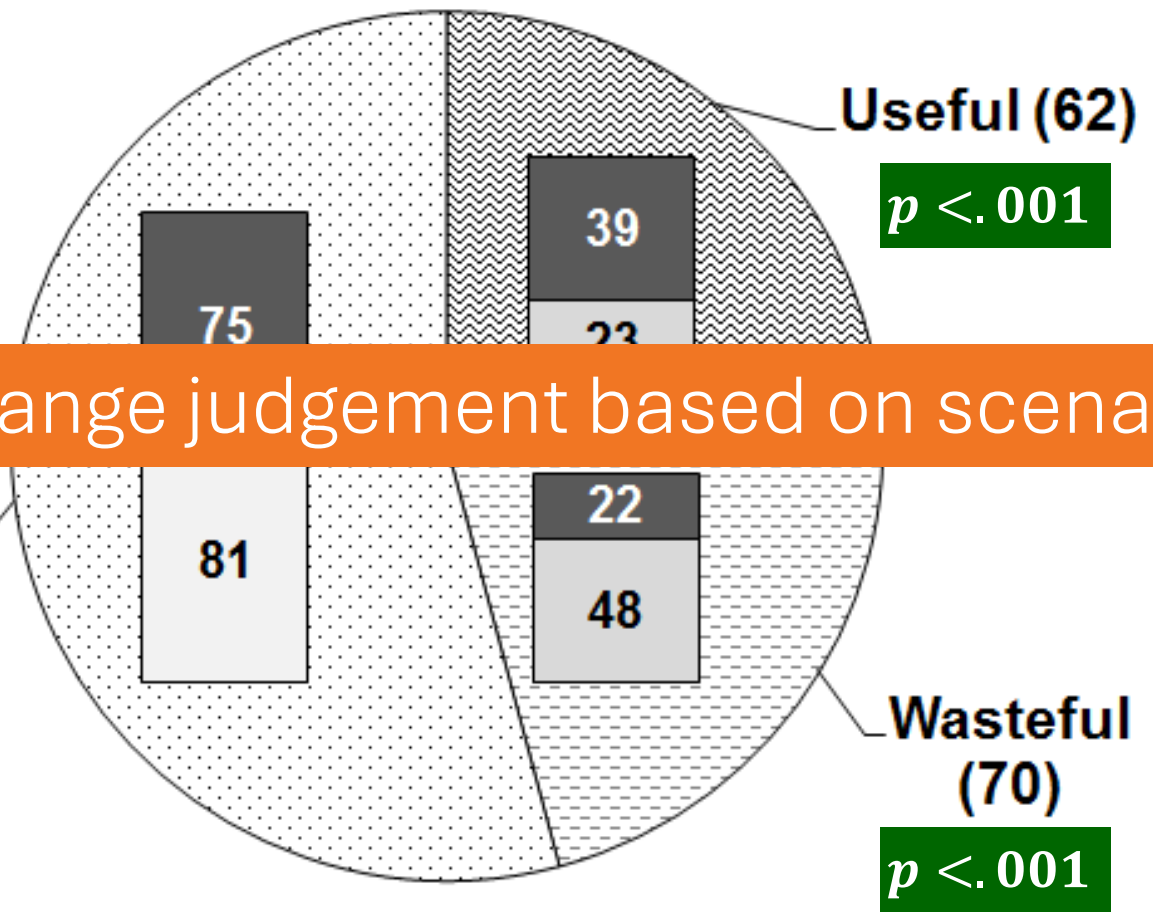


# Evidence of learning from scenarios (FFF)

55%-71%

Judgment changes about investment under future uncertainty.

■ Became more favorable (136)



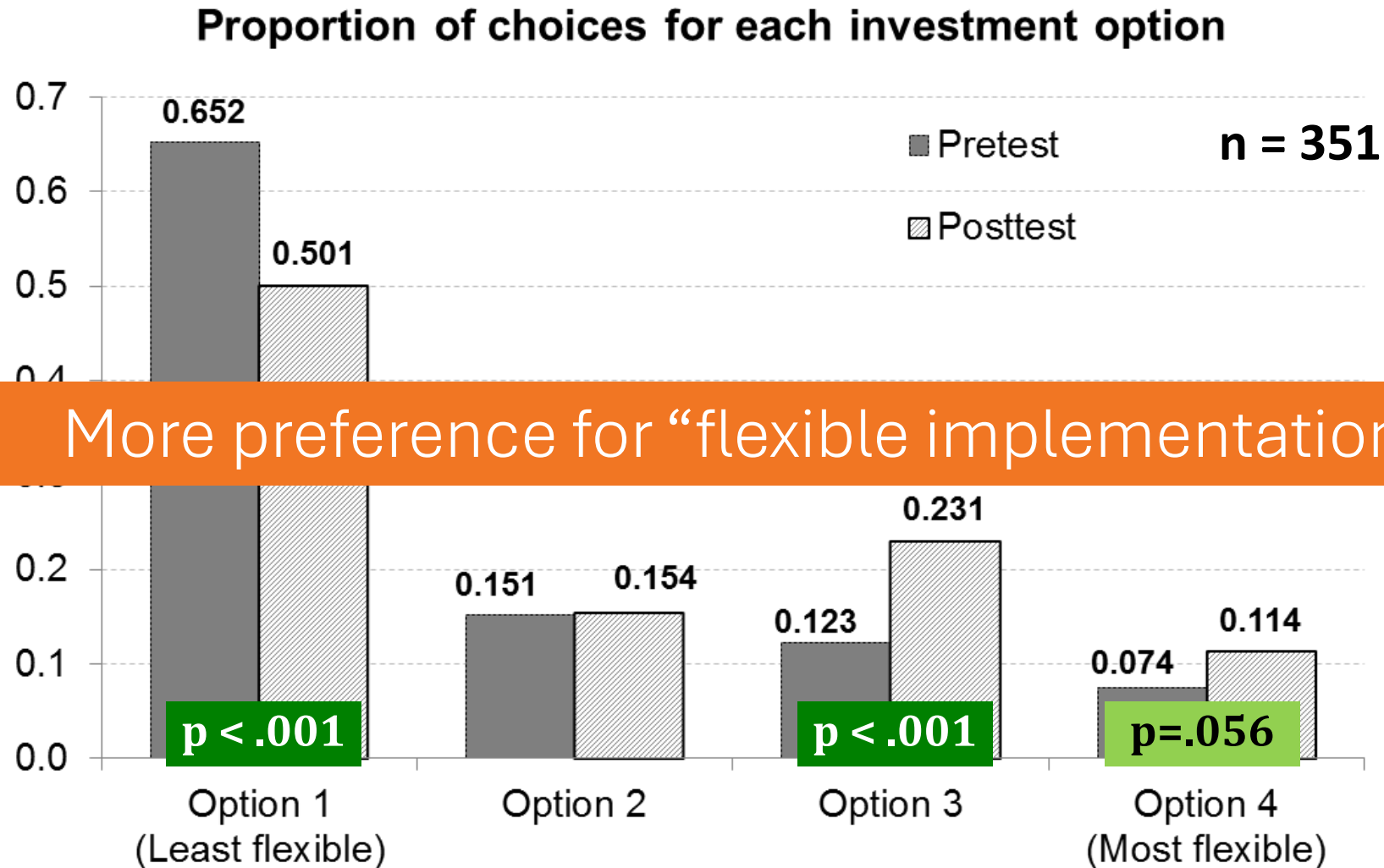
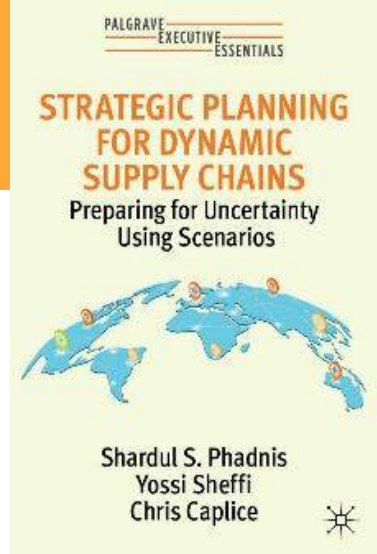
$p < .001$

$p = .291$

$p < .001$

“Experts” learn and change judgement based on scenario used

# Evidence of preference for flexibility



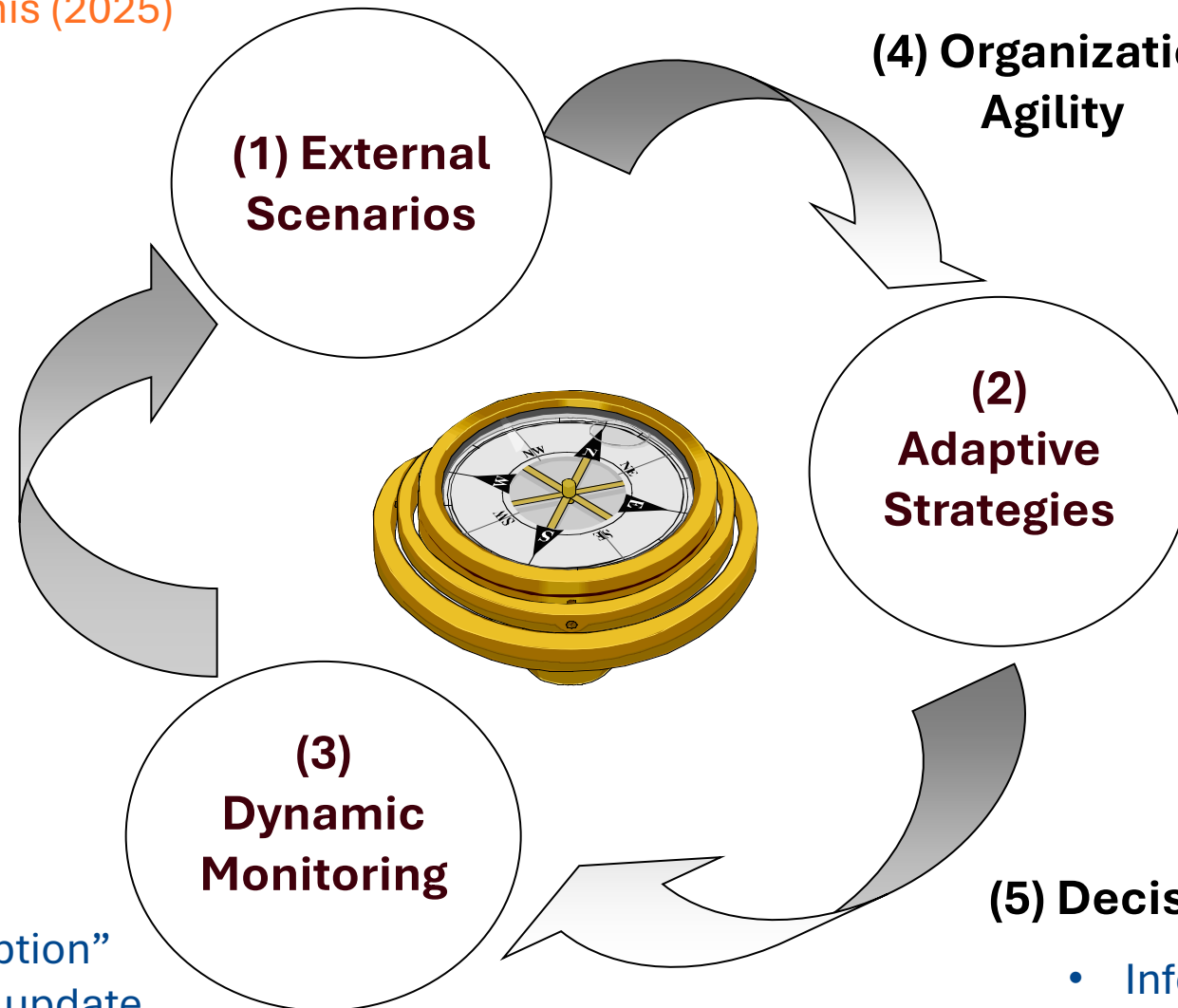
More preference for “flexible implementations”

# Recognizing signs of change: Evidence (Anecdotal)

- SC Strategy (AP) of chemical company (Phadnis & Darkow, 2021)
  - Global production footprint, market in 100+ countries
  - Market-focused businesses, regional functional units
  - Scenario planning project: 18 BUs and all SC functions
    - All BU, SC heads: ~70 employees (37 middle managers), 13 countries
- Timeline
  - 2011: Scenario development, SC strategy formulation
  - 2012-13: Implementation (30 initiatives: Op Excellence, Cust Focus, Innovation,...)
- 2014: Strategy review #1
  - Ops Managers postponed the agreed implementation of 6 initiatives
  - All initiatives had poor fit to the scenario that seemed to be emerging

# Scenarios are not enough: Compass for 21<sup>st</sup> Century

Ref: Schoemaker & Phadnis (2025)  
Forthcoming in *MIT Sloan Management Review*



- Respond to unforeseeable changes
- **Caveat: “Agility” poorly defined (Phadnis & Schoemaker 2026)**

- Implement SC assets with flexibility (“real options”)
- **Not a simulation**
- **Not just maximizing expected value**

- (6) Strong Leadership**
- Scenario planning for operational vigilance
- Encourage adaptability, monitoring

- Decide when to “exercise real option”
- Decide when to update scenarios

## (5) Decision Savvy

- Info-gathering, sharing
- Data-based decision-making

# Takeaways for Operations/SC Leaders (“Ops21”)

- **Lesson 1: Great need to apply scenario planning in Operations/SC Management**
  - Building manufacturing footprints with adaptability (strategic)
  - Operating manufacturing network with more agility (tactical)
  - Mindset change among operational planners
- **Lesson 2: Developing external scenarios alone is not enough**
  - Need adaptive strategies and dynamic monitoring
  - Agility as a complement to address unanticipated disruptions/opportunities
  - Important role for decision-savvy and visionary leadership
- **Lesson 3: GenAI makes scenario creation and application much easier!**
  - Significantly shorter scenario development times
  - Possibly easier to justify scenarios
  - Advantages for dashboard-based monitoring and tracking



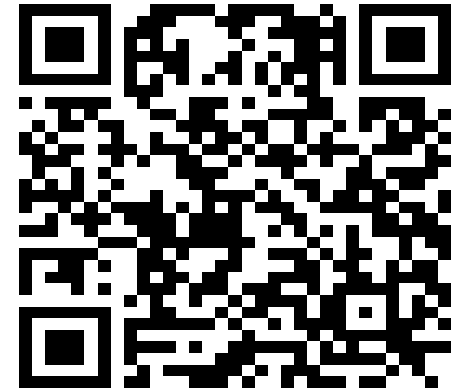
# Thank you. Connect.

- Asia School of Business  
(*and* Ops21: Operations for 21st Century)

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