

**Stockpiling and Classifications  
for both medicines and PPEs  
Matching Supply and Demand  
during a Pandemic**

“Manufacturing of products for emergency responses can be complex because the products are often for problems that have not yet occurred”. [Yamada]

Global Health Risk Framework: Research and Development of Medical Products: Workshop Summary

# Supply Chain Segmentation

What are we doing today ?

- “One size fits all” supply chain processes and policies – each SKU is created equally with no different capacity allocation decisions
- This “over-serving” of some SKU’s and “underserving” of others can lead to significant lost opportunities during a pandemic.

What is segmentation ?

- **Textbook:** “Tailoring a supply chain strategy that deploys resources in an optimal manner to drive profitability – this is achieved by adjusting the levers of service level, inventory, number of SKU’s, and capacity allocation”

What is our Goal ?

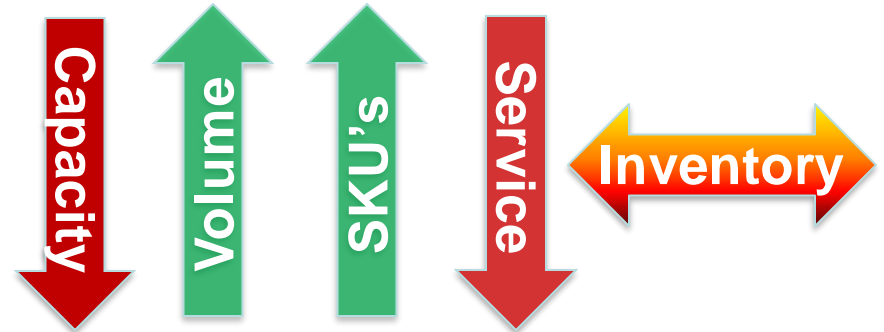
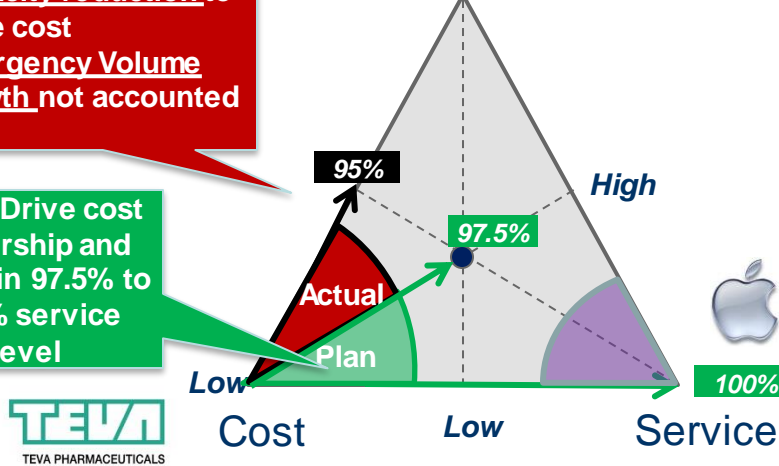
- Find the best service level, inventory, number of sku’s and capacity allocation policies to maximize both customer service and goal.

# Supply Chain Model

**How did we get here ?**  
 1. Capacity reduction to drive cost  
 2. Emergency Volume growth not accounted for.

**Plan:** Drive cost leadership and maintain 97.5% to 100% service level

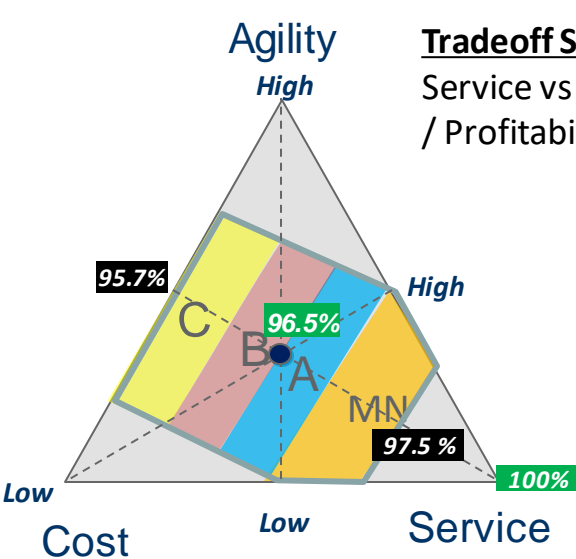
Agility **ZARA**  
 High



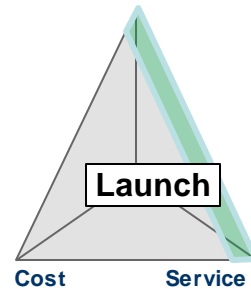
**FROM** **TO**

Agility  
 High

**Tradeoff Strategy:**  
 Service vs Capacity / Profitability

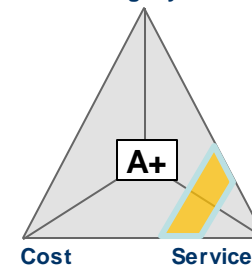


Agility



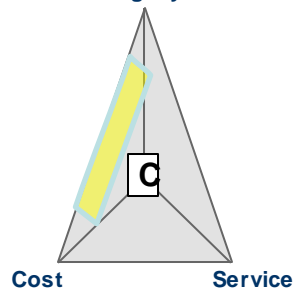
- 100 % service fill
- On time mfg & delivery
- Expedited supply chain to make shelf settings
- ME Medically Essential

Agility



- MN 99% service fill
- Inventory investment in FG, bulk or component
- Aligned mfg strategy (inv. buffers, rhythm wheels, etc.)
- ~5% sku's , 27% volume

Agility



- > 96% service fill
- Inventory aligned to "service target"
- 71% Sku's, 14% volume

## Research Questions

- Can a switch from batch to continuous manufacturing approaches benefit both routine and emergency production?
- Is stockpiling bulk or intermediate manufacturing step for finishing when needed (e.g., bulk vaccine stocks), potentially saving space and extending expiration a viable strategy?
- Can a data driven allocation model be developed to allocate and provide equitable distribution of drugs and PPE's?
- Demand forecasting during pandemic can it be developed with a certain confidence interval to meet supply and demand challenges?
- How to address local supply needs and global supply needs during a pandemic, any form of hybrid models which satisfies both?
- Can robust replenishment policies be developed and agreed upon with stockpile to keep the products fresh using a continuous consumption mode for different classes of products?
- Funding for Pandemic innovation commercial and Government responsibilities?

The background of the slide is a solid red color. In the upper left corner, the word "RUTGERS" is written in a white, serif font. Below it, in a smaller, white, sans-serif font, are the words "THE STATE UNIVERSITY OF NEW JERSEY". A large, faint, circular seal of Rutgers University is visible in the background, centered behind the text. The seal features a sunburst design and the text "RUTGERS THE STATE UNIVERSITY OF NEW JERSEY" around the perimeter.

RUTGERS

THE STATE UNIVERSITY  
OF NEW JERSEY

Questions