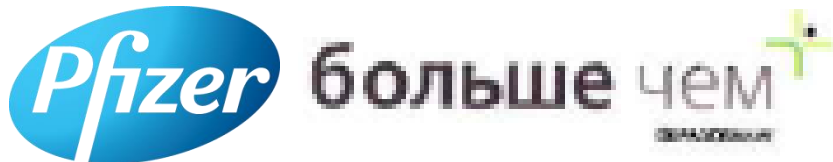



Day 4

Supply as a Source of Competitive Advantage



Large Biopharma Today



\$50+
BILLION

Revenue



150

Countries in Which Pfizer
Sells Products



50+

Manufacturing
Sites Worldwide



500

Third Parties Worldwide



150+

Market Logistics Centers



600

Major Product Groups



3000

Formulations



MORE THAN
30,000
SKU's

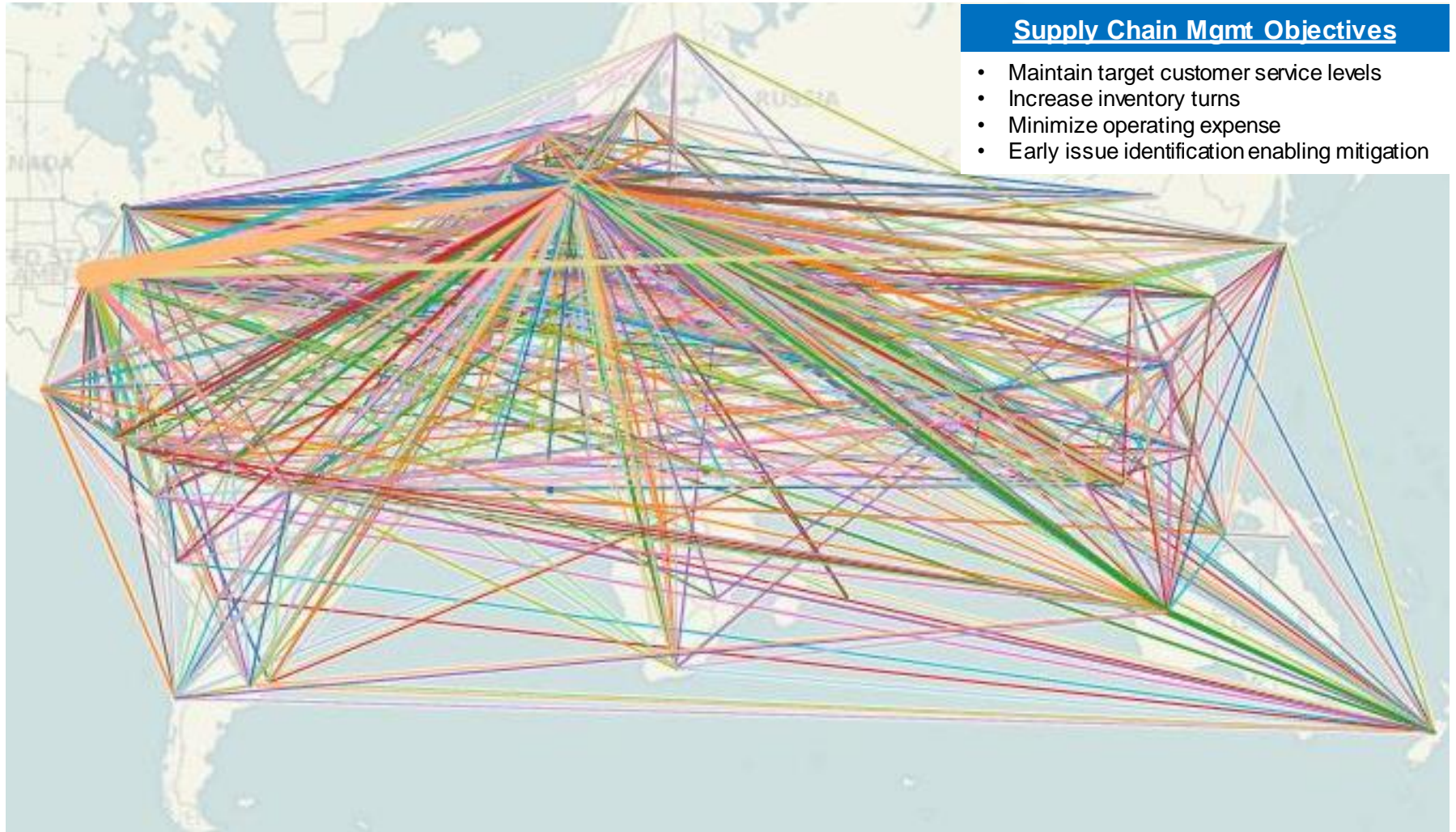
Worldwide

Agenda

Supply chain as a source of competitive advantage in the pharma industry.

- 1. Fundamentals of the supply chain**
- 2. Changing Environment**
- 3. Segmentation and how to make brand specific supply decisions based on product needs**

Large Network & Its Challenge



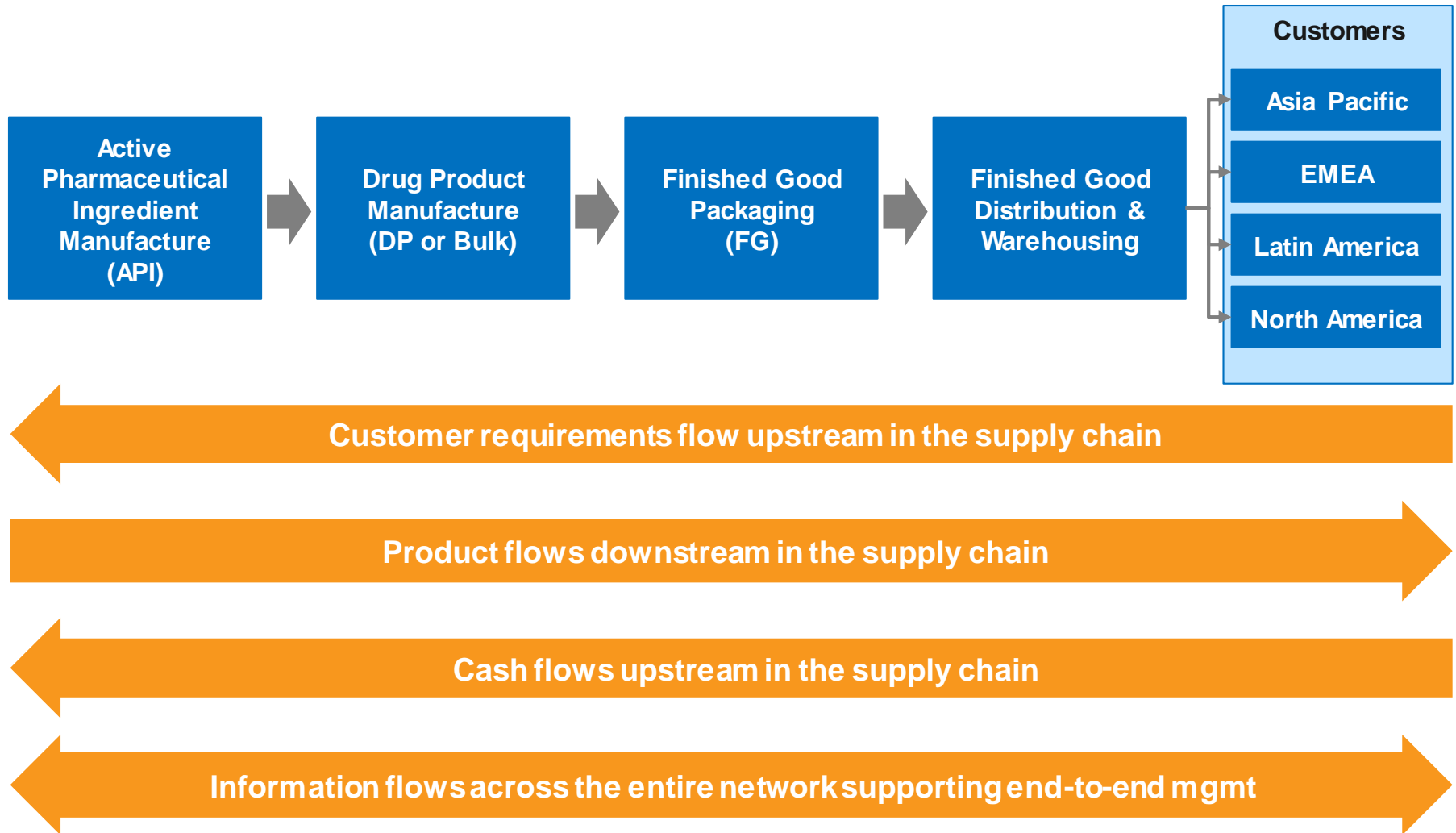
Supply Chain Mgmt Objectives

- Maintain target customer service levels
- Increase inventory turns
- Minimize operating expense
- Early issue identification enabling mitigation

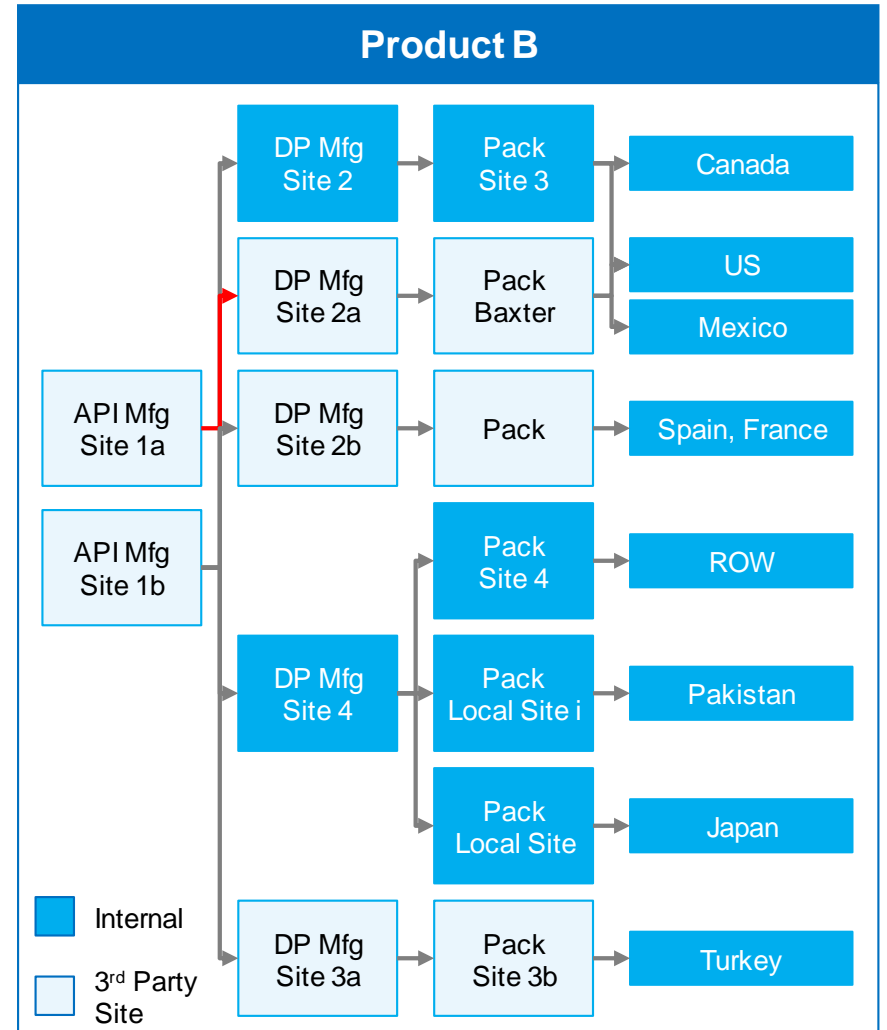
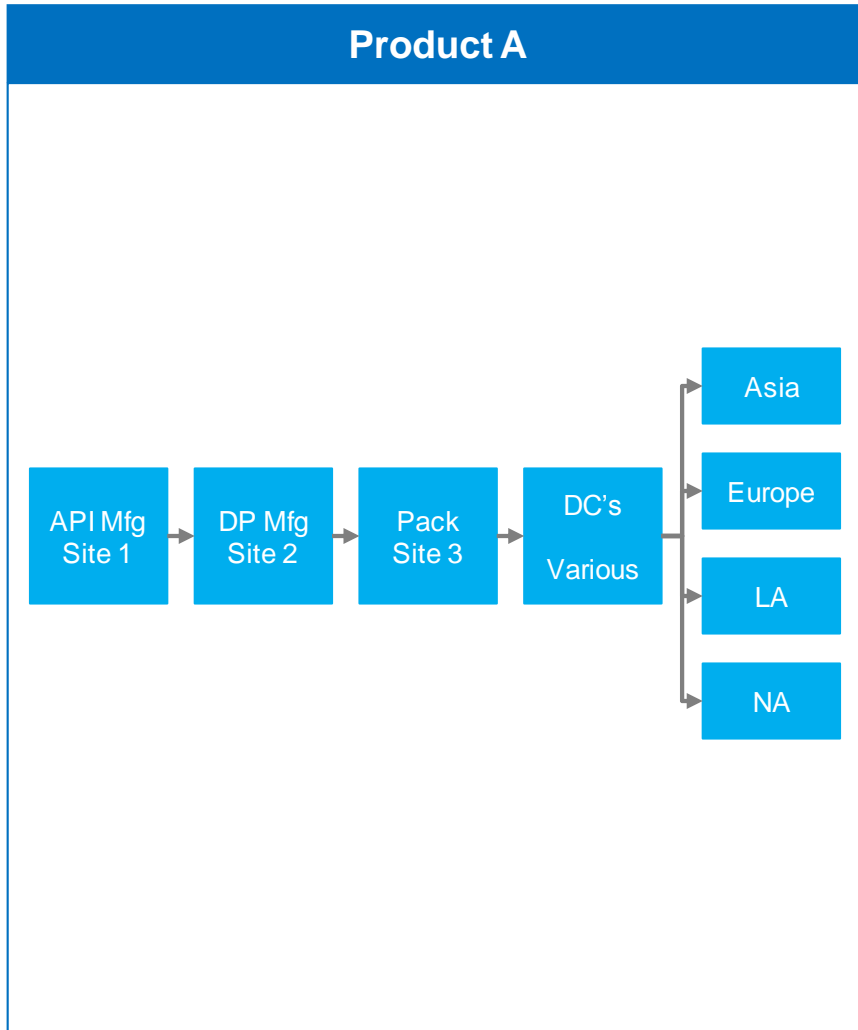
How Do We Keep Customers Happy?

- First let's review supply chain fundamentals

The Conceptual Model



Supply Chains of Varying Complexity

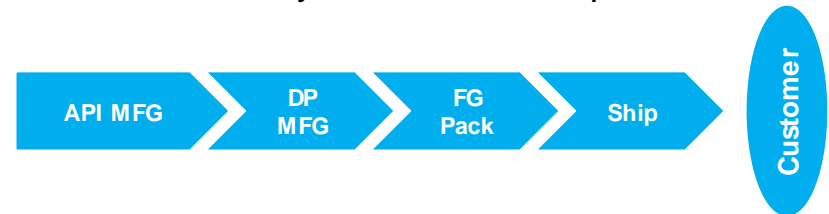


Inventory Management

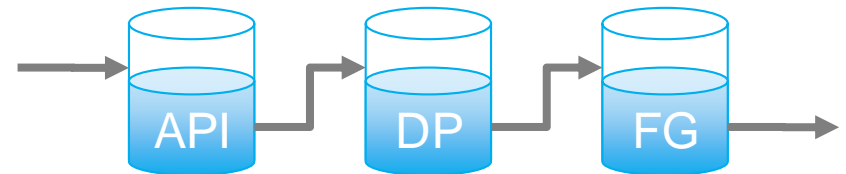
- Inventory typically the largest asset Supply Chain Professionals can influence
 - Target customer service level drives inventory policy
- Inventory supports production, activities and customer service
- Common inventory types:
 - Finished good, work-in-process, raw material, in-transit & maintenance inventory
- Inventory is a current asset on Balance Sheet
- COGs from Income Statement can be used to calculate financial MOH
 - Physical inventory consumption calculation required to determine true inventory coverage
- Changes in Inventories on the Statement of Cash Flows shows impact of inventory on cash position

Inventory Strategy

- If zero demand and supply variability existed, buffer inventory would not be required



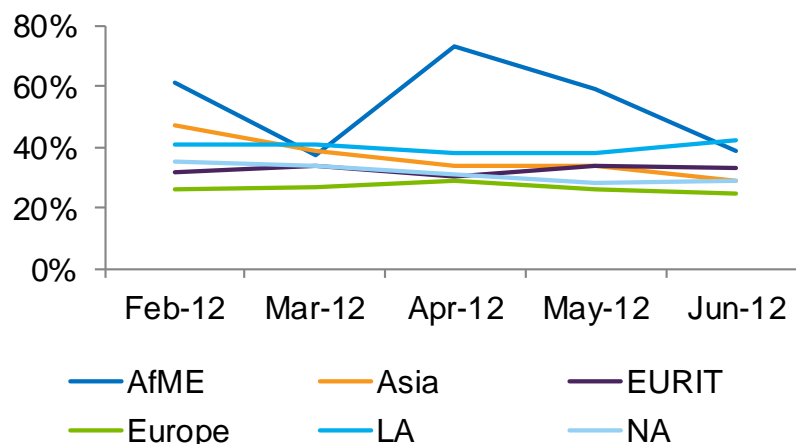
- Buffer inventory required to maintain customer service targets & optimization mfg & distribution operations
 - Forecasts rarely 100% accurate
 - Mfg & distribution variability exists
 - Operations sometimes need to be decoupled
 - Plant shutdowns need to be buffered



Demand Planning (1/2)

- Two main types of demand:
 - Independent & dependent demand
- Customer finished good demand is independent demand & is our focus for forecasting
- Forecasts for independent demand drive all supply chain activities (tactical & strategic)
- SKU level forecasts need to be refreshed routinely to ensure supply & demand alignment
 - Particularly important for volatile business like generic
 - Failure to refresh forecasts adds information lead-time
- 36 month forecast horizon required for accurate capacity mgmt, network strategy decisions, life cycle planning, budgeting, issue identification & mitigation, etc.
- Forecast error measured using various lags

Product X Molecule Forecast Error

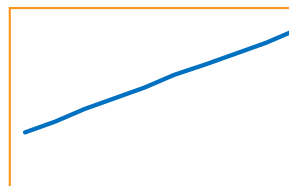


- Qualitative & quantitative forecasting methods exist
- Quantitative forecasting algorithms can be based on extrinsic or intrinsic data
 - Extrinsic: Birth rate
 - Intrinsic: Last month's sales
- Aggregate forecasts typically more accurate than SKU level forecasts

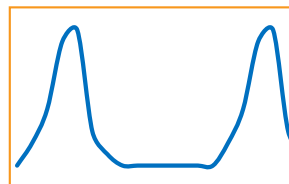
Demand Planning (2/2)

- Forecasting tools are available to Market Supply Leaders & Demand Managers
 - Logility or SAP Demand Planning
 - Common forecasting algorithms: naïve, moving average, weighted moving average, exponential smoothing, etc.
- Forecast development process
 - Market Supply Leader or Demand Manager review recent forecast error performance
 - Software tool develops statistical forecast based on historic sales data
 - Commercial colleagues in the market add market intelligence to the statistical forecast (LOE, competitor actions, new product launches, business wins / loses, etc.)
 - Updated unit forecast compared to latest financial forecast and any adjustments made to the forecasts
 - Market Supply Leader or Demand Manager align with Commercial on the updated forecast version and it is released in the system to drive operations
- Forecasting process part of Market S&OP

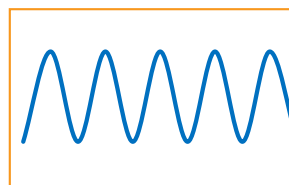
Variability in Demand



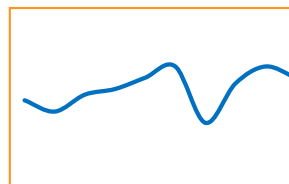
Trends are general direction of sales observed in historic data



Seasonality can be observed by predictable changes around calendar events

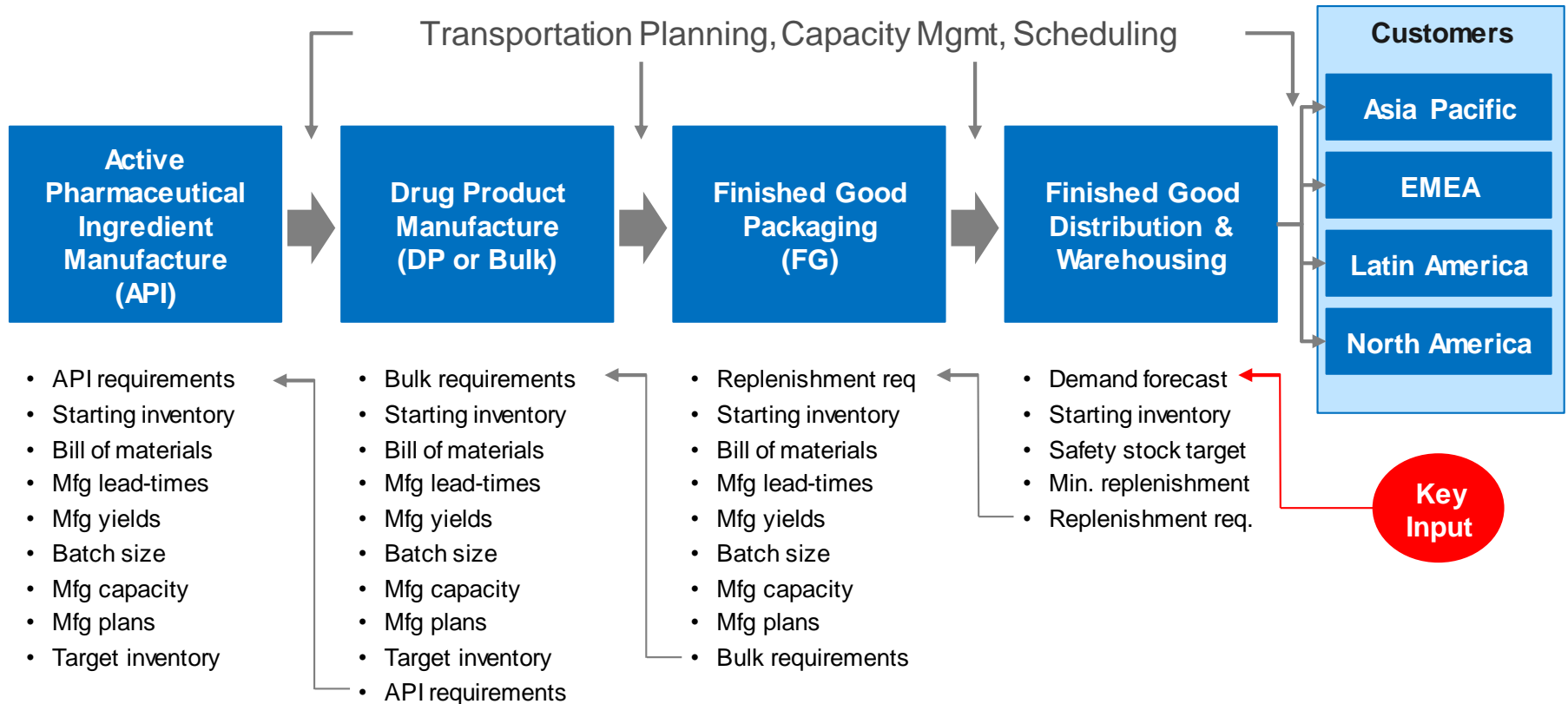


Cycles are sometimes observed within demand (rarely seen in our products)



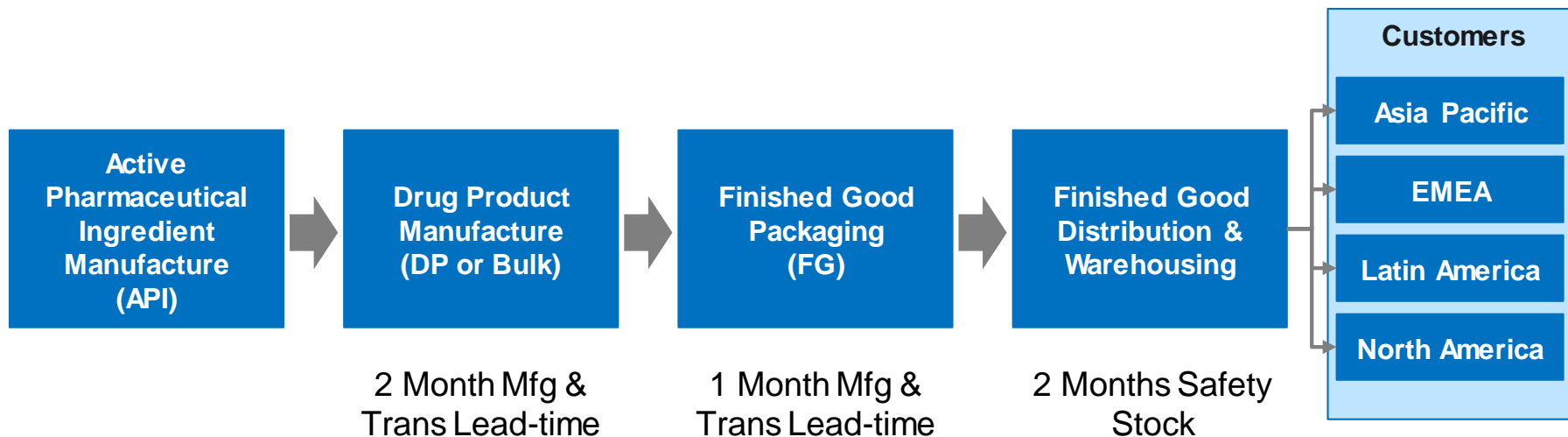
Randomness is observed by unpredictable demand changes

Supply Chain Planning



End-to-end Orchestration Required to Optimize Customer Service & Inventory Turns

Expiration Management



S&OP Process & Key Supply Chain Metrics

- S&OP process aims to ensure supply & demand alignment, early issue identification & management to objectives
 - Routine participation at market, regional, global and executive level essential to ensure financial & operational goals achieved
- Metrics for measuring forecast performance
 - Sales vs. Budget
 - Forecast error
 - Forecast comparison
- Metrics for measuring overall supply chain performance
 - Customer service levels
 - Inventory turns
 - Inventory write-off exposure
- Metrics for measuring manufacturing performance
 - Manufacturing vs. Budget
 - Manufacturing schedule attainment
 - Manufacturing lead-time & yields

What Is the Reality of Customer Needs

Traditionally in Big Pharma:

- Large Margins
- High Volume Products
- Lots of resources

Current Trend:

- Differentiation and Segmentation

Case for Change

Changing Business Environment

Increasing complexity, demand volatility, and margin pressures

- Many post-LoE products
- Growth in EM with higher volatility
- New smaller volume products
- New product launches and enhancements
- Regulatory pressures
- Complex commercial / trade strategies
 - e.g., DTM, DTP, DTC

Each business segment increasingly has significantly different needs, e.g.

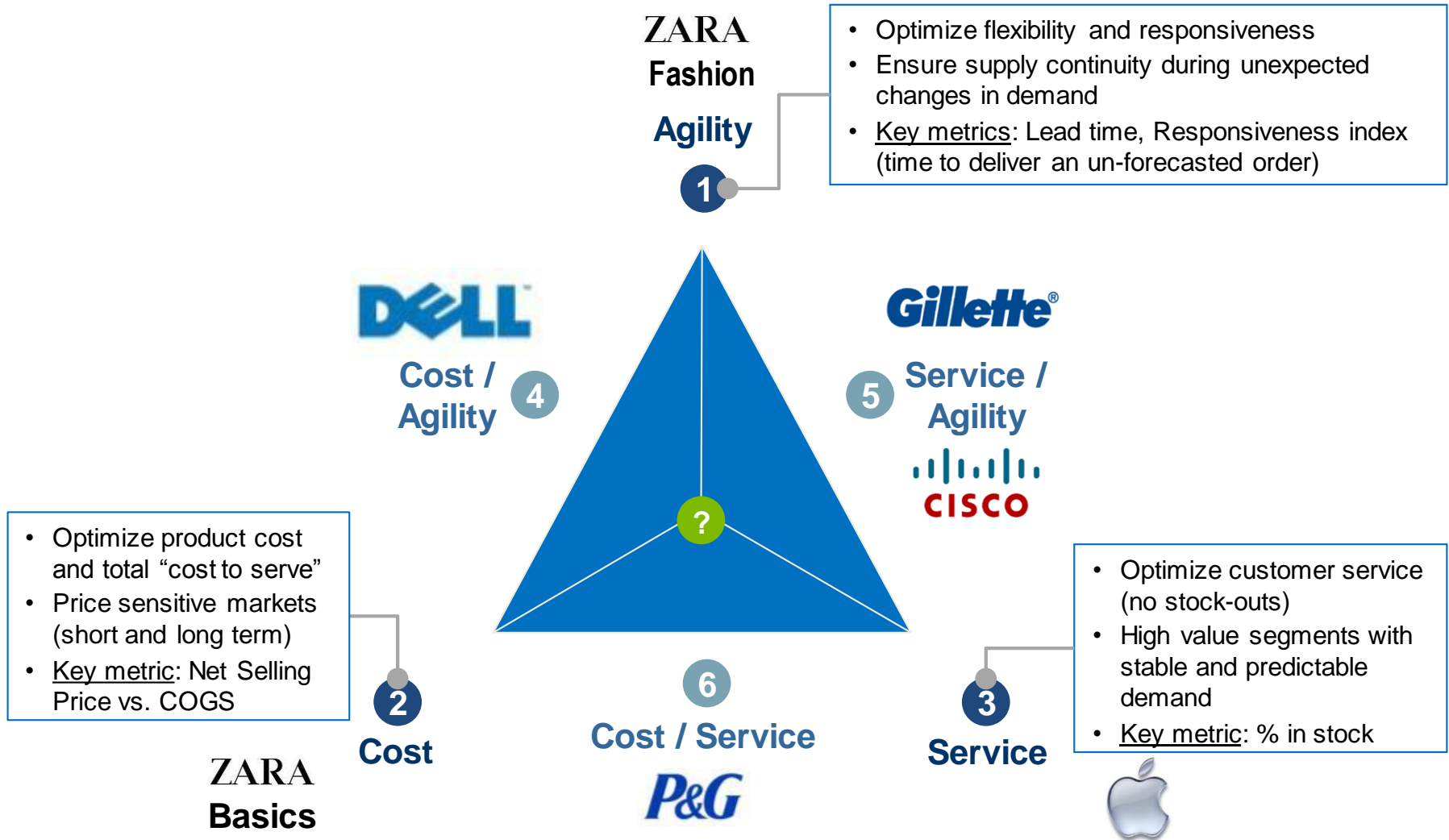
- Ensuring supply reliability and agility during new product launches
- Optimizing service levels immediately post-LoE to capture higher margin sales
- Technology innovation as a differentiator or to achieve step change in costs
- Quickly respond to unforeseen demand
- Minimizing cost to respond to competitive price pressures



We make difficult and tough choices...

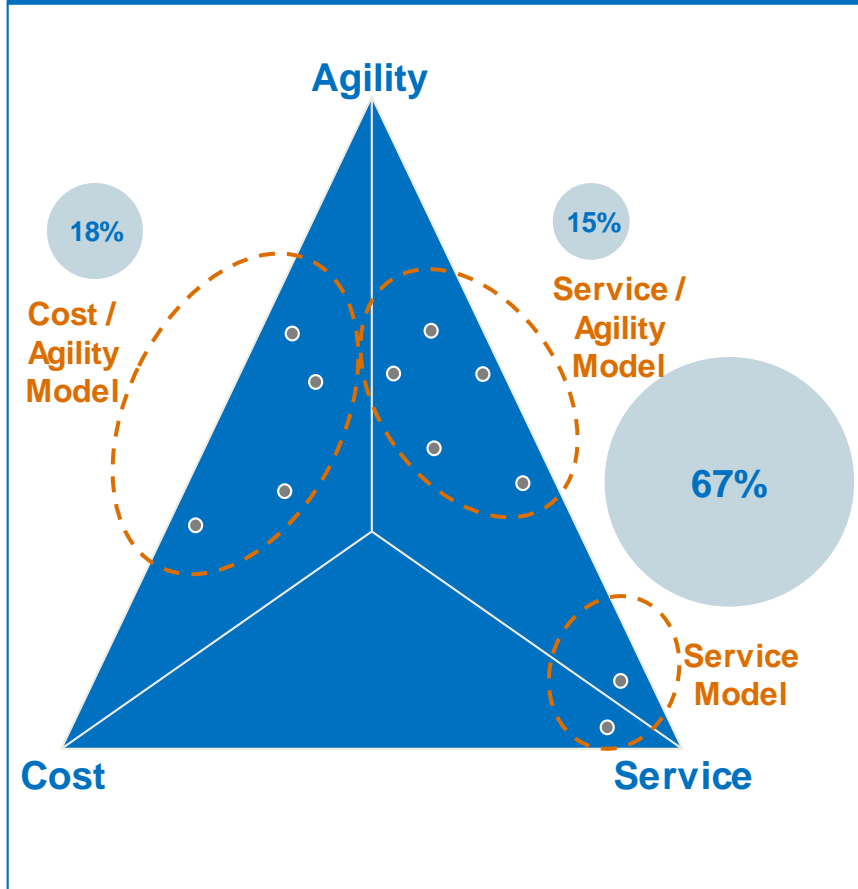
however, compromise to Quality / Compliance is NOT an option

Other Companies Facing Similar Challenges Have Leveraged Their Supply Chain as a Source of Strategic Advantage

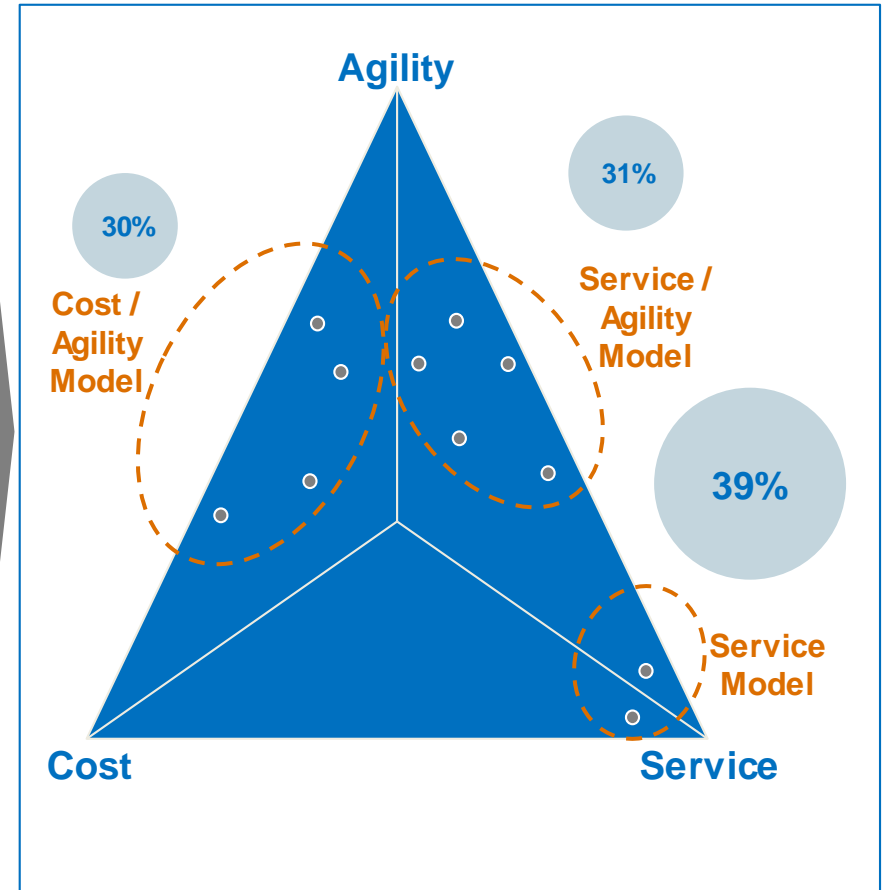


Pharma Is Shifting Towards More Cost Conscious Environment

2011: Breakdown of Revenue By Model



2020: Projected Breakdown of Revenue by Model

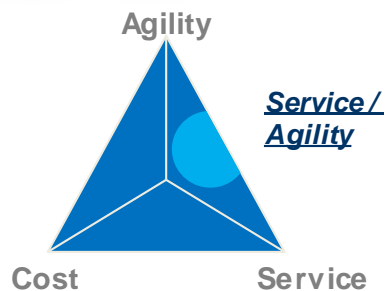


Three Elements of Value Chain Design to Meet Strategic Commercial Priorities

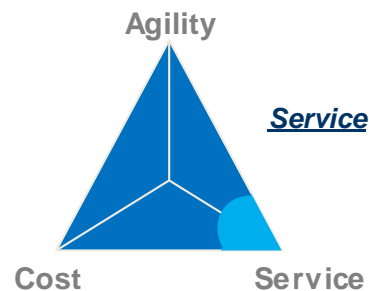
End to End Value Chain Design

Lifecycle Management Initiatives	“End state” Supply Chain Strategy	Segmented Supply Models
<p>Opportunities to support product lifecycle management</p> <p>Prioritized initiatives to address most critical customer needs</p> <p>Examples (Illustrative):</p> <ul style="list-style-type: none"> • API process change proactively anticipating of LOE cost pressures • Packaging technology / presentation innovation • Complexity management • Increasing patient adherence and / or capitalizing on customer insights 	<p>Required supply chain structure, sourcing decisions, and execution capabilities</p> <p>Cross-functional initiatives to transition supply chain to “end state”</p> <p>Examples (Illustrative):</p> <ul style="list-style-type: none"> • Move packaging of products to lower cost locations • Enable segmented production strategies within a site (e.g., rhythm wheels, pack-to-order) 	<p>End-to-end supply chain choices to meet segment priorities (e.g., ability to quickly meet unforeseen demand, minimize cost)</p> <ul style="list-style-type: none"> • Service • Service / Agility • Cost / Agility <p>Examples (Illustrative):</p> <ul style="list-style-type: none"> • Transport optimization to deliver 10% cost reduction • Larger order quantities, longer forecasting timeline, enabling high capacity utilization and 15% cost reduction • Inventory held at bulk in postponement strategy to increase agility

Envision Three Dominant Supply Models to cover peri LOE and post LOE space



- Flexibility to accommodate fluctuations in demand, with high service levels & fast response times
 - Investment in capacity and inventory, short changeover times
 - Demand sensing excellence, ability to quickly adjust production plans
 - Scenario planning with business & improved understanding of volatility



- Focus on customer service (no stock-outs) in markets with high margins and stable demand
 - High value segments with stable and predictable demand (medical necessary, patented products)
 - Deliberate investments in capacity, inventory and distribution / logistics

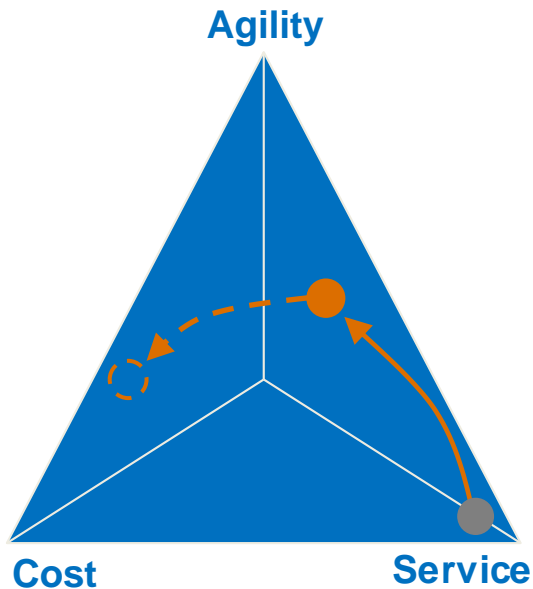


- Focus on cost competitiveness, while maintaining some ability to respond to limited changes in demand
 - Lower investment in excess capacity & inventory
 - Higher standardization of bulk & pkg platforms, complexity management
 - Two-way dialogue with business on priorities and scenarios

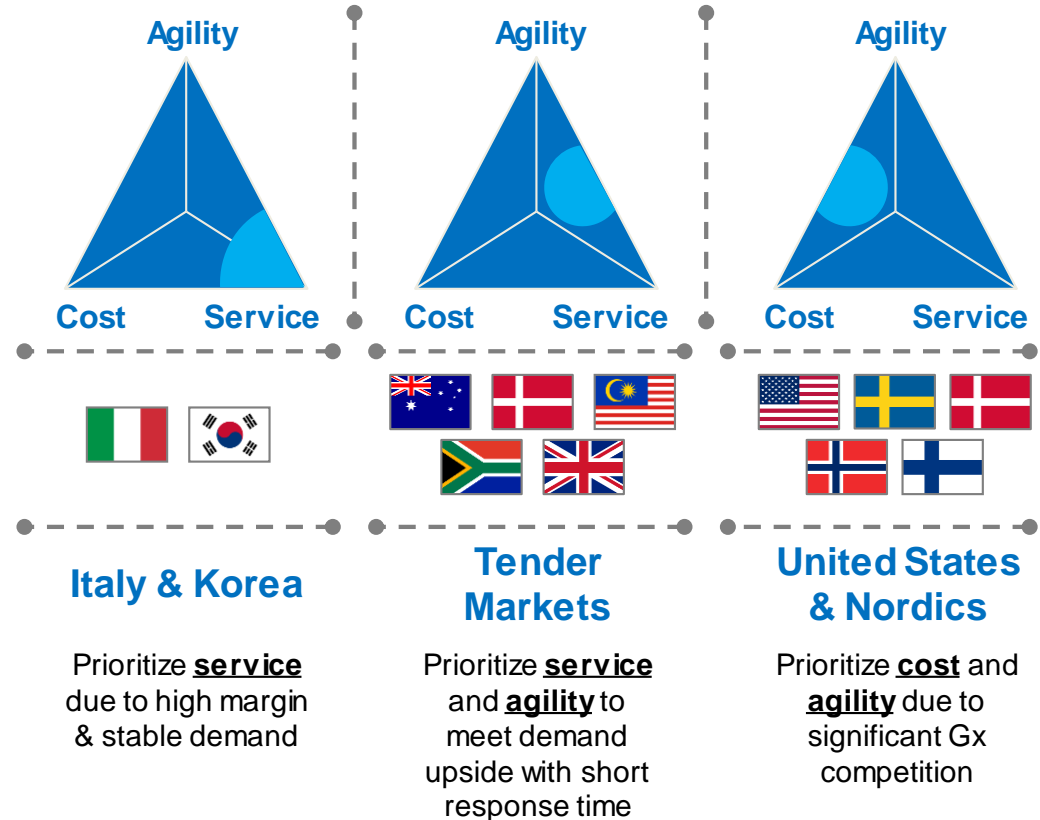
Increased Focus on Cost & Agility

Product Example

Overall, LOE Product Transitioning to Cost and Agility



However, Significant Differences in Cost, Service and Agility Requirements across Markets



Must engage with BU to refine understanding of its requirements & develop optimal supply models

Blank S/C choices template

Design Choices by Stage		Cost/Agility	Service	Service/Agility	Improvement Initiatives by Stage
Market Logistics	Trade Channel	Direct to Whlsr; Direct to Health Ministry	Direct to Hospital; Direct to Retailer	Direct to Pharmacy, Doctor, Patient	
	Order Frequency	Twice per month	Once per week	Once per day	
	Order Quantity	Large orders mandated via pallets/cases	Med. orders mandated via pallets/cases	Smaller orders via individual packages	
	Urgent order accept Monitoring	Accepted based on cost implications Lower capability with less investment	Limited need High capability	High High capability	
Market plan/fcst	Mkt-level fcst capab	Less-f req plan/review; above-mkt plan & fcst	More intense plan/f cst, stronger BU interface	More intense plan/f cst, stronger BU interface	
	Inventory	Targets adj. per agility req's, willing to stockout	Optimal inv. to achieve highest target svclevels	Targets adj. per agility, less willing to stockout	
	React to unexp. order	Limited	Limited need	Full capability	
C Logistics	Mode	Non expedited, cheapest option	Air v.s. Ocean (based on product req's)	Expedited Air	
	Routing	Contracted rates/vendors only	Contracted rates w/flexibility to ensure service	Full flexibility	
	Frequency/cube util.	Optimized f or high utilization	Medium-high	Full flexibility	
	Monitoring & Security	Lower capability with less investment	High capability	High capability	
	Shipment urgency	Limited acceptance	Limited need	Full acceptance	
Pack/Label: Site name(s)	Prod. Plan Methods	Rhythm Wheel, Campaigning	Fixed sequence, limited flexibility on volumes	Flex rhythm whl and/or produce/pack to order	
	ES Contracts	Firm and fixed	Variable and flexible	Variable, flexible with backup sourcing	
	Complexity	Low via common packs	Mix of common and non standard	Highly customized, localized offerings	
	Asset Capacity	Fixed and shared	Limited spare capacity	Spare & flexible	
	Labor capacity	Fixed and shared	Fixed and dedicated	Spare & flexible	
	Schedule	Firm & fixed on monthly basis	Variable	Highly Variable	
	Plant Inventory	Postponement critical	Postponement not critical	Postponement critical	
Form/Fill: Site name(s)	Production Method	Rhythm Wheel, Campaigning	Constraint management, Rhythm wheel	High Speed Changeovers	
	ES Contracts	Firm and fixed with no backup capacity	Variable and flexible	Variable, flexible with backup sourcing	
	Complexity	Low via common tabs (markings, form.'s)	Mix of common & non-standard	Some customized offerings as needed	
	Asset Capacity	Fixed and shared	Limited spare capacity	Spare & flexible	
	Labor capacity	Fixed and shared	Fixed and dedicated	Spare & flexible	
	Schedule	Firm & fixed on monthly basis	Variable	Variable	
	Plant Inventory	Postponement critical	Postponement not critical	Postponement critical	
API: Site name(s)	Production Method	Rhythm Wheel, Campaigning	Constraint management, Rhythm wheel	High Speed Changeovers	
	ES Contracts	Firm and fixed with no backup capacity	Variable and flexible	Variable, flexible with backup sourcing	
	Location	Low Cost	Med Cost	High process capability locations	
	Asset Capacity	Fixed and shared	Limited spare capacity	Spare & flexible	
	Labor capacity	Fixed and shared	Fixed and dedicated	Spare & flexible	
	Schedule	Fixed on a monthly bases	Can flex based upon need	Some variability month to month	
	Plant Inventory	Postponement critical	Postponement not critical	Postponement critical	
Network plannin	Planning Type	Long range	Long range	Short range (eg daily)	
	Forecast Frequency	Monthly	Monthly	Monthly, update as needed (tenders)	
	Forecast Accuracy	High (<10%)	Medium (10-25%)	Low (> 25%)	
	Mgmt approach	Autopilot; exceptions only	Active management	Active management	
	Planning Intensity	Light	Medium	Heavy	
	Inventory	Lower investment	Variable (inv. to prevent stockout)	Heavy investment (Strategic stock for vol.transfer)	

Segmented Supply Chains in Action

What Does This Mean to the Global Product X Franchise?

Margin and Volatility Data Suggests Three Different Segments

