Flexible & Scalable Fulfillment and Distribution Network Models

Tompkins International

Your Supply Chain. The Right Way.

About this report…

- The information in this report was originally presented at the 2016 Tompkins Supply Chain Leadership Forum
- The 2017 Tompkins Supply Chain Leadership Forum will be held **May 8-10** at the beautiful Washington Duke Inn & Golf Club
- To learn more about attending #SCLF2017 go to www.tompkinsinc.com/sclf

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Executive Summary

- Customer service levels and cost to serve are the two critical measures for a supply chain network.
- A large variety of distribution network options exist in today's customer driven environment.
- A one size fits all approach is not likely to succeed.
- Networks involving an eCommerce component are inherently more difficult to evaluate.
- Global networks inject a much higher degree of risk to the network design and therefore must be more flexible and scalable.

Factors Influencing Distribution Network Design

- Distribution network performance is determined by the intersection of two variables:
  - Customer Service Needs
  - Network cost

Network Design Considerations

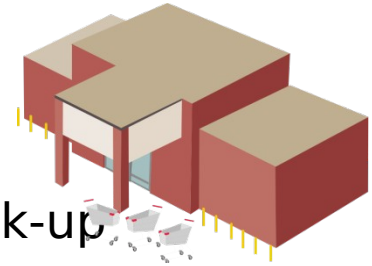
- Customer service needs
  - Response time *…for ever-increasing expectations*
  - Flexible and scalable service *…future-proofing your network*
  - Product variety and availability *…real time, endless-aisle*
  - Customer experience *…creating loyalty by exceeding expectations*
  - Visibility *…to adjust and improve inventory optimization*
  - Returns policies *…too often overlooked*
  - Purchase and shipping costs *…the bottom line*

Network Design Considerations

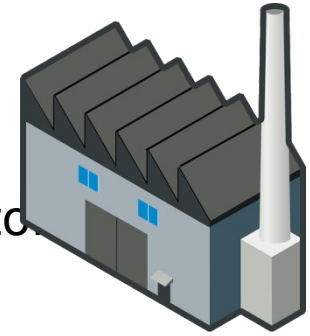
- Cost of meeting customer service needs
  - Facilities and material handling
  - Inventory
  - Transportation
  - Information and technology

- With both customer expectations and the rate of change ever-increasing it is equally important that solutions optimize for the current situation without unnecessarily limiting future options.

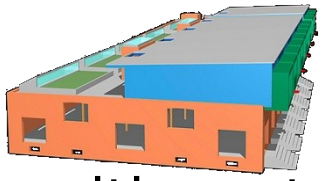
Design Options For Distribution Networks



- Retailer
  - direct to customer or customer pick-up
  - to store
- Manufacturer
  - direct to end customer
  - direct with in-transit merge (single package for custo



- Distributor
  - with carrier delivery
  - with last mile delivery

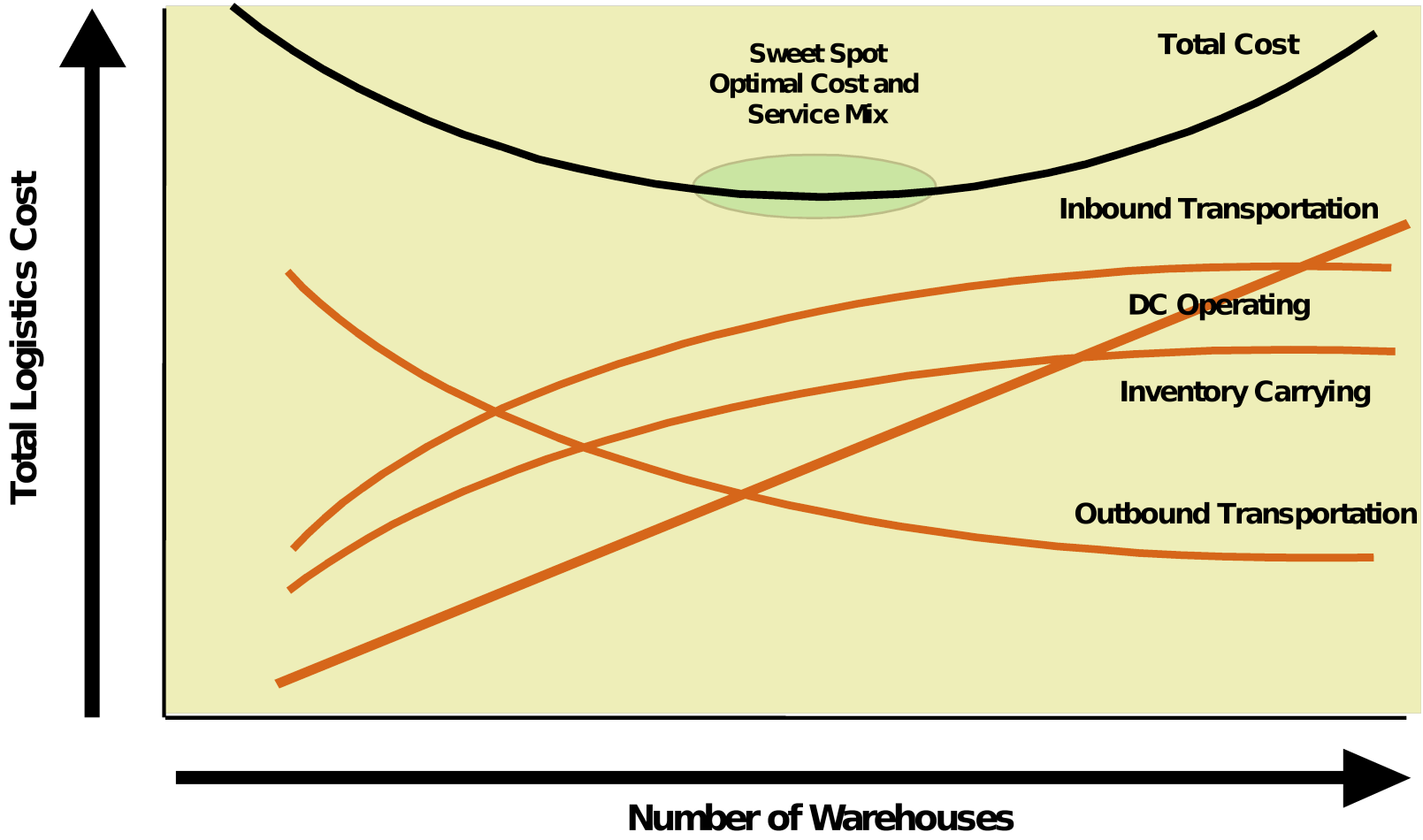


- Manufacturer / Distributor with customer pick-up

Design Options For Distribution Networks

- In today's environment most companies use a hybrid of different network models to fulfill their customers needs and cost requirements.
- A combination of Fulfillment Centers (FCs) and Distribution Centers (DCs) are often used to get product to customers fast enough to satisfy them.
- Transportation costs may be secondary if the speed of delivery is critical to customers.
- Inventory may also need to be added to ensure customer expectations are met.

Design Options For Distribution Networks



eCommerce Considerations

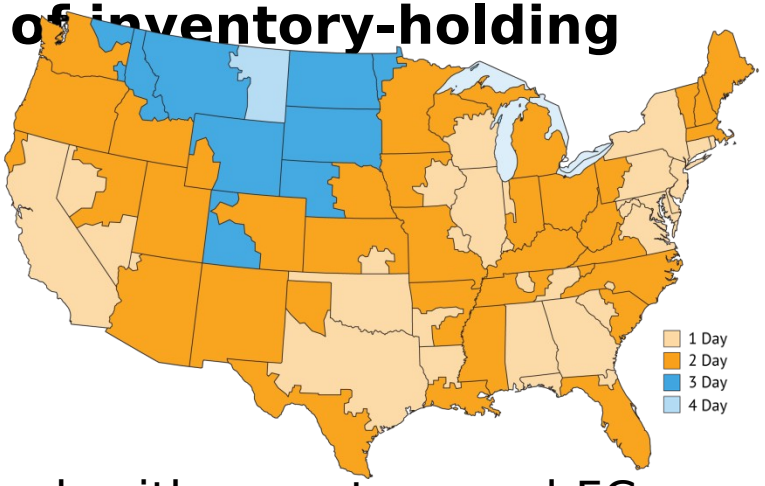
- Distribution networks that involve eCommerce operations are by definition much more complicated.
- A combination of DC's and FC's are required to support eCommerce delivery which is critical to how many and where different types of facilities are located.
- A growing combination of points of order entry (online, mobile, virtual / physical showrooms, retail outlets) also further complicate the network by impacting where, when, and how customers place orders.
- The requirements are also much more difficult to achieve when eCommerce is a significant and volatile option in the supply chain as it is with so many companies today.
- In addition to DC's and FC's there are also sortation centers to consider and position in the network.
- Modeling such networks are difficult and require higher level analysis tools and insights.

Global Supply Chain Networks

- Global supply chains add another layer of complexity to the network design.
- Network length and delivery time are increased exponentially making the decision where to source, store, and fulfill a challenge.
- Risk is added to the network when globalization is the chosen network option:
  - Increase capacity
  - Utilize redundant suppliers
  - Increase inventory
  - Increase source capacity and flexibility
  - Build the network for scalability as demand increases or peaks occur
  - Business continuity

Other considerations

- **Combined DC/FCs** reduce the number of facilities required to successfully service the business, while stabilizing workforce requirements due to slightly different peak seasons.
- Ever-increasing **service expectations** for customers necessarily **increases the number of inventory-holding locations**.
  - World-class in the U.S. is currently two-day delivery everywhere with next-day service to approximately 80% of the population.
  - The minimum number of inventory locations required to achieve two-day service everywhere is 7 facilities, although 96% may be covered with "only" 5.
  - Consider augmenting an existing network with an outsourced-FC solution to achieve desired service levels while minimizing capital cost requirements.



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