Strategic Supply Chain Design

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This talk describes how e-business and other strategy approaches can address today’s supply chain pitfalls.

- long lead times
- complex product offerings
- lack of visibility

The approaches combine shorter lead times, increased visibility and a mixture of pull, push, and, as Simchi-Levi refers to it, push-pull.
The pitfalls are illustrated by the retail automobile supply chain

- Custom-orders take too long
- Dealer inventory inefficient due to numbers of locations
- Dealer inventory and orders do not capture demand accurately
- Extra level creates beer-game effect
Pitfalls - examples

- Large numbers of dealers in metropolitan areas
- Option packages that are not quite correct
- Bubble effects (filling or emptying pipeline when middle levels or plants change ordering patterns)
Approaches to deal with these problems combine both information flow and supply chain structure

- Information flow
  - Order visibility to production system
  - Consumer-based ordering

- Structure
  - Improvement of push-pull part of system
  - Restructuring of push part of system
  - Reducing lead time and responsiveness of pure pull system
What are the issues with information flow?

- Replenishment in a push system needs to reflect true customer demand.
- Factories and suppliers need to respond to true shifts in demand.
- Factory and supplier shifts need to be within limits consistent with production constraints.
Some bullwhip (beer game) causes

- Filling the pipeline
- Batching
- Promotions

If the supplier sees end-point demand (and lead times are shorter), then better adjustments can be made.
In addition to the order visibility, other IT improvements are also important.

- Capturing true demand (increasing custom orders)
- Better forecasts for push part of system (managing replenishment information centrally)
- Limitations on or management of replenishment
Structural approaches are based on type of system
Push system structural issues

- Number of physical locations
- Positioning of different types of items
- Limitations of items available

The concept is to reduce the number of physical locations for at least slow-moving items
For any large-scale system, inventory grows significantly with number or positions.
One method for reducing inventory points is what I call the storefront concept

- Distribution can be centralized
- Service can be decentralized - and be made better
- The result will be different notions of service facilities - smaller, more numerous points of contact but fewer, more centralized inventory and distribution sites
The Storefront Concept is based on the notion that the retailing or dealer aspect of a distribution chain performs many functions:

- Sales
- Service
- Parts
- Demonstration merchandise
- Inventory
- Customer contact

There is no reason that all of these should be performed in one location.
The approach was implemented at Union Carbide’s packaged gas business

- Carbide delivered cylinders of gas (or bulk gas) and supplies to branches from plants.
- Carbide converted some branches to storefronts - Customer contact points and “walk-in” service points.
- The service was still the same.
- The economics was an elimination of three steps out of five.

1. Filling and Storing cylinders and parts centrally
2. Loading cylinders and parts on trailers and delivering them to branches
3. Unloading and storing cylinders and parts at branches.
4. Warehousing and handling
5. Loading parts and cylinders on truck routes and delivering them to customers