



15.778

Management of Supply Networks for Products and Services: Concepts, Design, and Delivery

Key Takeaways Document – Part V

Barilla SpA Discussion¹

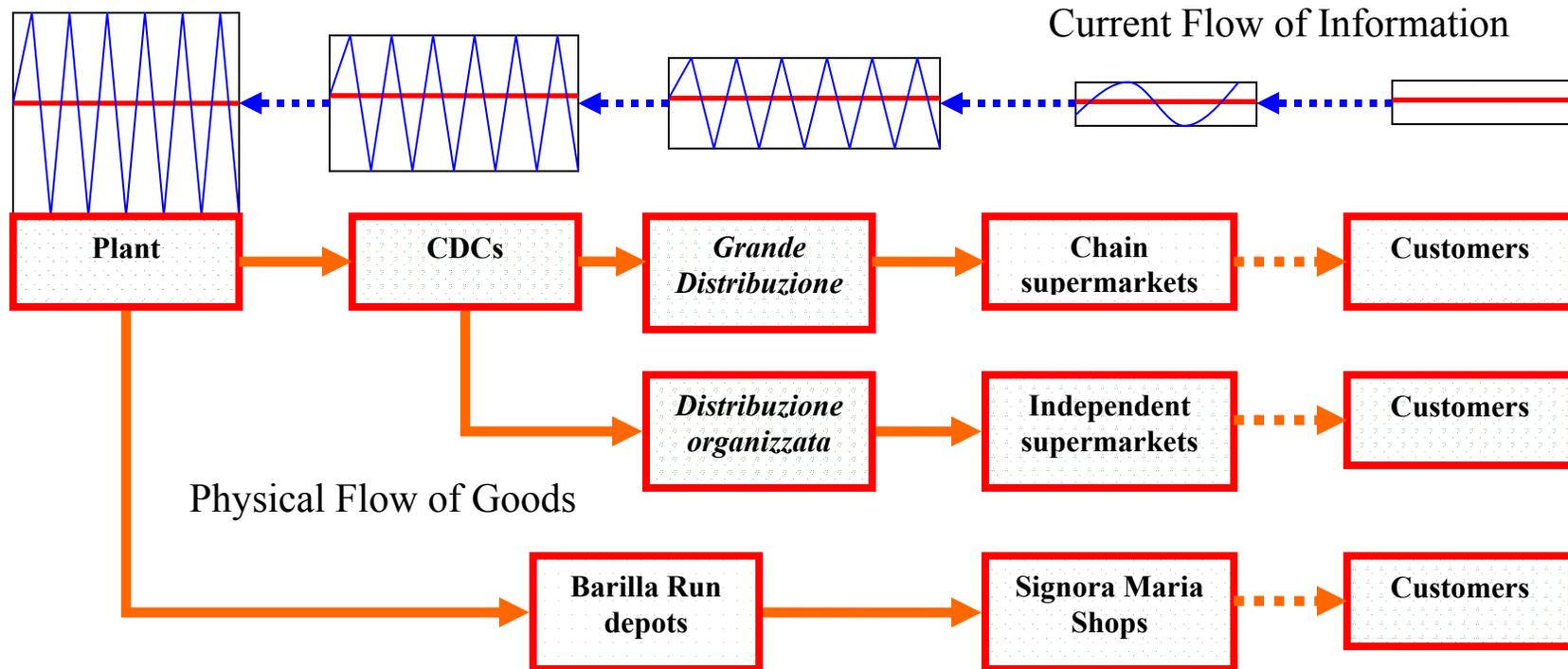
Notes² by G. Bitran

- Agenda and intended purpose of these notes
 - These present the key takeaways and messages from each session / lecture.
 - Internalize the key learning from each lecture.
 - Understand the link between class readings and the core messages from each lecture.
 - These notes are not intended as a substitute for the class readings or lecture slides.
 - They also provide a look back at the ground we have covered so far in the class.

¹ Version created on Thursday, August 16, 2004

² Based on class discussion and on Barilla SpA (A) Case

Structure Induces Behavior

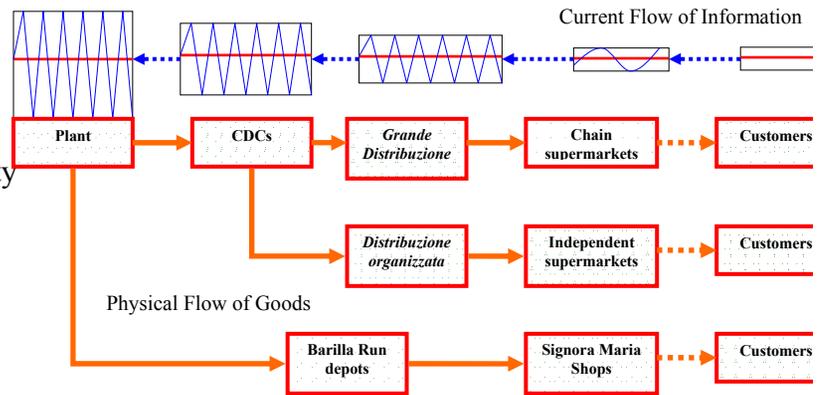


Key characteristics of current operations:

- Variability in demand, specifically in the order quantities, propagates (bull-whip effect) as we move upstream in the supply chain.
- However, contrary to previously held beliefs, it is the way the system is managed that creates the bull-whip effect—in other words it is an endogenous phenomenon that is a result of the structure of information flows and of communication in the supply chain.
- Each downstream unit placed orders for Barilla product with the immediately upstream unit. Thus in the “current operations”, **there is no single entity that is responsible within the supply chain for the overall problem of matching supply / capacity in the production and distribution chain, with the demand from the end-customer for the hundreds of Barilla products.**

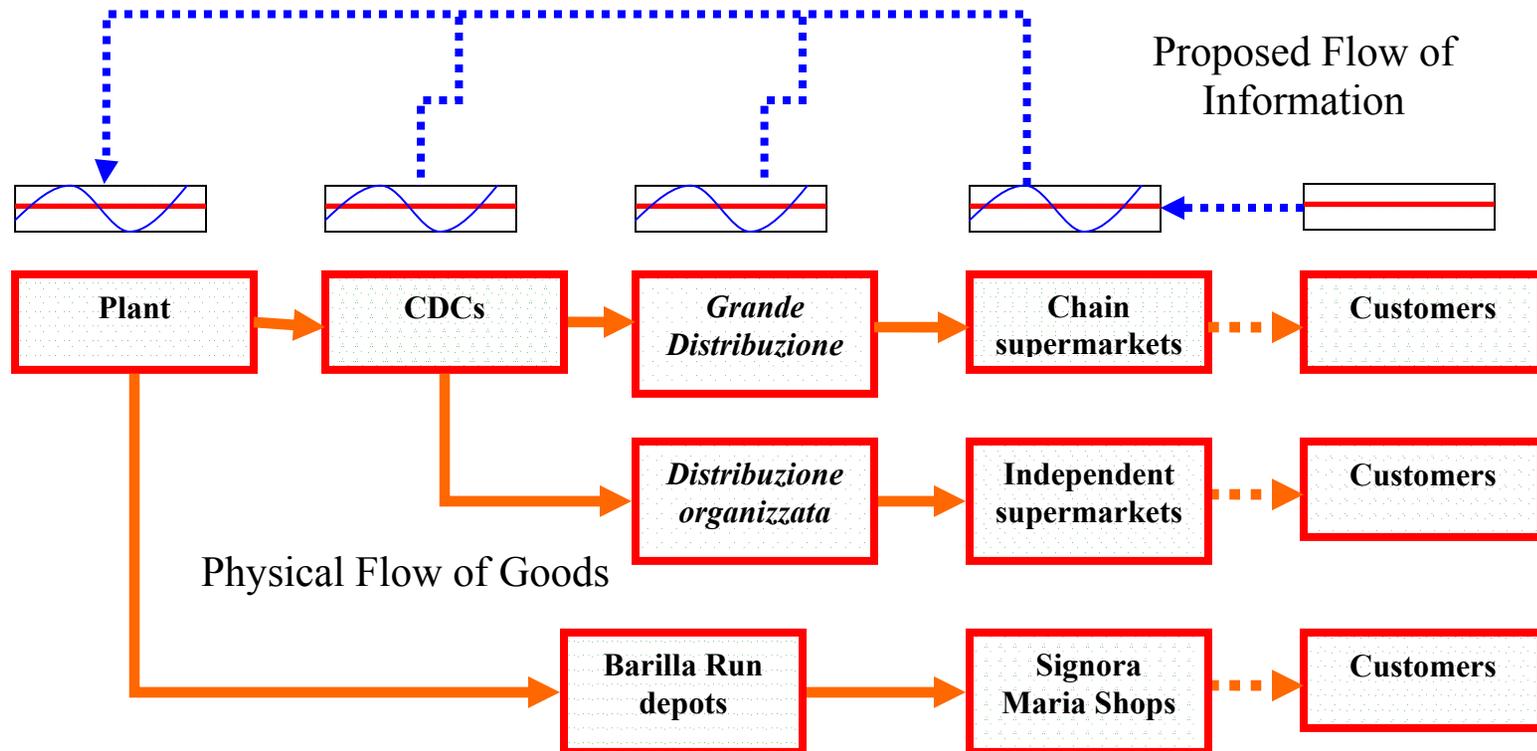
Sources of demand Fluctuations

- Distributed Inventories
- Promotions (4 to 5 weeks)
- Full truck load / less than truck load
- Time availability of information
- Process (production) inefficiencies and variability
- No inventory information
- Lead time and lead time variability
- Too many products (SKUs)
- No forecasting
- Lack of sophistication of distributors
- Sales force incentives
- Quantity Discounts
- Local vs. global optimization
- Inflated orders



Costs attributable to demand fluctuations

- Inventory costs
- Order costs
- Lost customers (stock-outs and their fallout)
- Overcapacity
- Increased space requirements
- More trucks (increased transportation requirements...)
- Quality issues (for example, low quality batches produced earlier, that are not discovered before time of consumption)
- Overtime
- Perishability



Envisioned characteristics of proposed system

- Information on intermediate stage demand, and ultimately the end-customer demand is available to Barilla.
- Barilla will allocate inventories to (and therefore make ordering decisions on behalf of) its downstream distribution unit based on the latter's inventory levels, and based on Barilla's forecast of end-customer demand for its products.
- Therefore Barilla will attempt to control the flow of physical goods through the supply chain, based on accurate demand information that is not biased, as is the case with the current system, with the distribution centers perception of Barilla's capacity and reliability. Rather Barilla will determine the flow of goods on its own best available information regarding its own capacities and process capabilities.
- Thus previously, while there was no single entity responsible for this task, Barilla will now take the important step of matching the production and distribution network supply / capacity with the end-customer demand for Barilla products.

Further illumination of operational concepts behind the new proposal

- Push versus Pull
- Replenishment based on usage, inventory, and forecasting
- Process independent of operator skill
- Joint or global optimization, as opposed to local or sequential optimization

Parties involved (or impacted by the proposal)

- Internal Stakeholders
 - Manufacturing / Production
 - Sales
 - Logistics
- External stakeholders
 - CDCs
 - Distributors
 - Retailers

Resistance from parties involved based on following issues

- Risk sharing
- Sales compensation in new mode of operations
- Removal of inventory would expose previously unknown (or hidden) inefficiencies in some parties policies and organization
- Loss of control, and removal from decision-making authority from the hands of the distributors
- Loss of shelf space for Barilla products at both the DC as well as the retail level: was a problem feared by Sales
- Result in more power to “Barilla”
- Trust
 - Will Barilla share any profits / benefits from the efficient mode of operations, with the other parties?
 - Will Barilla share the risks of loss and failure in the projects and ventures that would result from this program?
 - Will Barilla demonstrate the competence to make this new mode of operations a living reality?

What Barilla did to overcome obstacles (Spa (B) Case...)

- Pilot the concepts in two Barilla run distribution centers, with marked success.