Supply Chains in the healthcare industry

Trends & best practices

November 19, 2009
Brussels
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Agenda

- Supply Chains in its perspective
  - Sector differentiation
  - Challenges & Trends

- Supply Chains optimization
  - Network redesign
  - Supply chains differentiation
  - Inventory management
  - Warehousing optimization
  - Outsourcing

- Supply Chains collaboration
  - Operational capabilities
  - Sales & Operations Planning

- Closing statements
## Supply Chains perspective

**Logistics parameters**

<table>
<thead>
<tr>
<th>Performance attribute</th>
<th>Performance Attribute Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply Chain</strong></td>
<td><strong>Delivery Reliability</strong></td>
</tr>
<tr>
<td><strong>Responsiveness</strong></td>
<td>The velocity at which a supply chain provides products to the customer</td>
</tr>
<tr>
<td><strong>Flexibility</strong></td>
<td>The agility of a supply chain in responding to marketplace changes to gain or maintain competitive advantage</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td>The costs associated with operating the supply chain</td>
</tr>
<tr>
<td><strong>Asset Management Efficiency</strong></td>
<td>The effectiveness of an organization in managing assets to support demand satisfaction. This includes the management of all assets: fixed and working capital</td>
</tr>
</tbody>
</table>
Supply Chains perspective
Healthcare differentiation

<table>
<thead>
<tr>
<th>Performance Attribute</th>
<th>Non-Patented Drugs</th>
<th>Bio-Pharmaceuticals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td><img src="image" alt="Superior" /></td>
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<tr>
<th>Performance Attribute</th>
<th>Medical Devices</th>
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<td>Reliability</td>
<td><img src="image" alt="Superior" /></td>
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- superior
- advantage
- parity
Supply Chains perspective
General trends

Market challenges

The financial crisis and a more demanding customer have significant implications on the supply chains …

… increase balancing on costs versus customer service

**Cost** leadership vs.
Quality **reliability** vs.
**Agility** and speed

Supply Chains response

- Consolidation in regional network structures
- Enhance supply chains flexibility & agility
- Apply stringent risk management
- Control net working capital / inventory value
Supply Chains perspective

Healthcare trends

Healthcare challenges

- Pressure on the sales margins, especially in
- **Counterfeit** medicines through the internet
- Numerous **patent endings** for bigger companies
- **Speed to market** has reduced, resulting from stricter legislation
- **Smaller blockbusters** than before

Supply Chains response

- Supply chains simplification
  - Reducing degrees of separation between manufacturer and end-consumer
- Delivery specialization
  - Tailor made supply chain solutions
Supply Chains perspective
Supply chains response

In high cost, high competitive value areas

Focus on economy of scale
buy companies specialized in R&D or
increase market share by takeovers

In high cost, high logistics competitive value
Optimize logistics
Minimize (logistics) costs

In high cost, low logistics competitive value
Why compete?
Why not cooperate?

• Network redesign
• Supply chains differentiation
• Inventory management
• Warehousing optimization
• Outsourcing

• Sales & Operations Planning
• Collaborative Planning
  Forecasting & Replenishment
Agenda

• Supply Chains in its perspective
  • Sector differentiation
  • Challenges & Trends

• Supply Chains optimization
  • Network redesign
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  • Inventory management
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• Supply Chains collaboration
  • Operational capabilities
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• Closing statements
Network redesign
Cost factors

- Inbound vs. warehouses
- Line haul vs. warehouses
- End customer transport vs. warehouses
- Building vs. warehouses
- Handling vs. warehouses
- Inventory vs. warehouses

Total costs - inbound transport
Total costs - line haul transport
Total costs - customer transport
Total costs - warehouse building
Total costs - handling
Total costs - inventory
No. of warehouses
No. of warehouses
No. of warehouses
No. of warehouses
No. of warehouses
No. of warehouses
Network redesign
Cost factors - overview

SUPPLY CHAINS
TOTAL COSTS

Inventory
Inbound transport & Line-haul
Storage & handling
End customer distribution

No. of warehouses

Total operational costs
**Network redesign**

*History (1)*

<table>
<thead>
<tr>
<th>1957</th>
<th>1990</th>
</tr>
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<tbody>
<tr>
<td>European Economic Community established</td>
<td>Schengen agreement effective</td>
</tr>
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</table>

- Limited integral Supply Chain awareness

- Decentralized country approach:
  - DC’s self-owned
  - Local stock management
  - Local transport
  - No / limited article overlap
  - No / limited diversification in service

![Map showing network redesign history from 1957 to 1990](image-url)
## Network redesign

### History (2)

<table>
<thead>
<tr>
<th>European Union</th>
<th>AUT, FI, SE</th>
<th>Euro (€)</th>
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<tbody>
<tr>
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<td>joined EU</td>
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- Moderate integral Supply Chain awareness
- Centralized European approach:
  - From self-owned to outsourcing
  - Central stock management
  - Transport based on hub structure
  - Service diversification on country level
  - More VAL activities

[Map showing network redesign]

**Network redesign**

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[Map showing network redesign]
### Network redesign

**History (3)**

<table>
<thead>
<tr>
<th>10 nations joined EU</th>
<th>RO, BUL joined EU</th>
<th>SL adopted The Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>2007</td>
<td>2009</td>
</tr>
</tbody>
</table>

- Full integral Supply Chain awareness
- **HUB & SPOKE structures:**
  - DC’s mainly outsourced & set-up varies per product channel combination
  - Stock management per product channel
  - International trunking - local distribution
  - Service is customized
Supply chains differentiation

Reasoning

- “We are serving local market with local warehouses”
- “All products must be physically available at all our warehouses”
- “Medicine deliveries are very specific, because we do not deliver at the door of a warehouse”
- “Medicines have specific storage conditions to guarantee the quality”
- “We need flexibility because medicines have very short customer lead-times (same-day deliveries)”
- “Validating a complete supply chain is impossible”

Is there one best practice supply chain solution for all pharmaceutical manufacturers?
## Supply chains differentiation

### Logistics models

<table>
<thead>
<tr>
<th>Volume manufacturer</th>
<th>Network integrator</th>
<th>High-tech manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasis on service &amp; costs</td>
<td>Expert in supply chains network design</td>
<td>Technology lifecycle leader</td>
</tr>
<tr>
<td>Manufacturing using mature technology</td>
<td>Specialist in channel innovation</td>
<td>Integrates with R&amp;D</td>
</tr>
<tr>
<td>Achieves excellence in Lean &amp; Six Sigma</td>
<td>Coordinates &amp; executes global launch</td>
<td>Expert in accelerated launch</td>
</tr>
<tr>
<td>Integrates with wholesaler channels</td>
<td>Manages network performances</td>
<td>Pursues highest quality and regulatory compliance</td>
</tr>
</tbody>
</table>
Stock level management is extremely important for pharmaceutical product because of the following:

- Limited shelf life of products
- Relatively high value of product
- Product range increased due to country/label specifics
- High cost for space due to conditioning requirements
- Extra space required for separated storage of lots

Stock levels can be reduced by:

- Postponement activities - Delay the moment of switching from generic product to specific product to last (cost efficient) moment, when more is clear about sales profile
- Optimize production batch sizes - When determining production batch sizes take into account not only production costs but entire supply chain costs
- Centralization / virtual warehousing
- Use forecasting and stock control processes & tools
Driving factors in warehouse optimization for pharmaceutical companies are:

- Tracking and tracing requirements on lot level
- Shelf life / FEFO requirements
- High picking accuracy requirements
- High risk products (narcotics)
- Conditioned products (temperature, humidity control)
- Quality status control
- Special packaging requirements
- GDP, GMP requirements

In general, any mistake can influence health....

Due to high quality requirements, warehouse optimization in pharmaceutical business tend toward reduction of human error possibilities by:

- high level WMS support of processes - online info through RF / pick to light
- Automation and mechanization efficiency possibilities could be limited depending on warehouse sizing
- RF control quality could increase dramatically by introducing standardized bar-coding
Outsourcing
Business drivers

- focus core activities
- access new markets
- access int. networks
- business growth
- improved mgt.
- shared risks

- decreased fixed costs
- reduced operational costs
- reduction fixed assets
- reduction inventory costs

> 30%

Strategic Issues

> 50%

Performance Improvement

- shorter lead-times
- on time deliveries
- reduced complexity
- improved order accuracy
- shorter order to cash cycle
- improved velocity to change

> 40%

Access to resources

- access to external expertise
- access to advanced tools & systems
- access to new technology
- access to modern facilities
- access to up-to-date equipment

> 60%

Costs reduction

Source: LogXpert & VIL benchmark
Based on customer perception studies:

“It has been estimated that about 40% of the global logistics is outsourced, for Europe just over 50%”
• The outsourced spends are more regional and more concentrated compared to other industries.

• The outsourcing of logistics activities is relatively limited within Pharma industry;
Outsourcing
Outsourcing priority

Opportunity for competitive advantage

High

Low

Supply chain activities

Simple

Complex

TRANSPORTATION
optimize occupancy rates of transportation equipment

WAREHOUSING
focus on “public” warehousing to reduce costs

PACKAGING
localization and other value added logistics

INVENTORY
liaison between bulk production and customer base

AFTER SALES
customer service helpdesk & trouble shooting

PLANNING
Supply chain coordination core competence
Outsourcing
Level of outsourcing VAL

Value Added Logistics

- High End
- Low End

Logistics activities

Simple
Complex

- Printing of text & labeling
- Sealing
- Bundling of promotion material
- Adding parts and materials
- Packaging & repacking
- Quality checking
- Testing
- Sterilization
- Repairs
- Final assembly
- Bundling of promotion material

Outsourcing
Level of outsourcing VAL
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• Closing statements
Outsourcing
Healthcare current levels of collaboration

Knowledge sharing
• Create platforms on validation approach
• Share information on regulatory issues per country

Experience sharing
• Select vendors based on experience in pharma / with validation
• If possible, purchase equipment / systems based on validated status

Facility sharing
• Share temperature controlled storage areas
• Share GDP storage facilities
• Share GMP facilities (for postponement, Value added etc.)
• Use LSP’s specialized in pharma

Transport sharing
• Share temperature controlled transportation
• Combine direct distribution transport
• Share hazardous goods transportation
Stage 4
Cross enterprise collaboration

- Establish a full collaborative supply chains strategy:
  - Aligns participating companies' business objectives and associated processes
  - Results in real-time planning, decision making and execution of supply chains responses to customer requirements

High-Tech
FMCG

Stage 3
External integration

- Strategic partners throughout the global supply chains to collaborate to:
  - Joint business objective & action plans
  - Enforce common process & data sharing
  - Define, monitor and react to performance metrics

Healthcare

Stage 2
Internal integration

- Company wide process & continuously measured data
- Resources managed at both functional and cross-functional level

Automotive

Stage 1
Functional focus

- Discrete sc processes & documented data flows
- Resources managed at department level

Outsourcing
Healthcare vs. other industries

Stages of operational capability
• **Purpose of S&OP:**

  • On a monthly basis **align** relevant Sales & Marketing and SC developments (forecast, assortment, market actions) with **key decision moments** (cost, pricing, introductions, capacity..), to respond to demand and supply variations and risks.

  • The level of subject review is covering **relevant deviations and developments** in the business, short term as well as long term, resulting in **financial or operational adaptations** to the plan.

  • The work is **prepared** and/or executed outside the S&OP platform to provide the right information for appropriate **decision making**.
Sales & Operations Planning

Benchmark – reasons to apply S&OP processes

Why companies look into S&OP

- Volatile market / uncertainty in demand: 36%
- Meeting customer service expectations: 41%
- Rising Supply Chains costs: 44%

Source: Aberdeen Group, August 2008
Logistics costs as % of sales

Source: Aberdeen Group, June 2007
### Customer order fill rate

<table>
<thead>
<tr>
<th>% of respondents</th>
<th>Best in Class S&amp;OP</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 50%</td>
<td>0%</td>
<td>64%</td>
</tr>
<tr>
<td>61-70%</td>
<td>2%</td>
<td>11%</td>
</tr>
<tr>
<td>71-80%</td>
<td>4%</td>
<td>15%</td>
</tr>
<tr>
<td>81-85%</td>
<td>9%</td>
<td>13%</td>
</tr>
<tr>
<td>86-90%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>91-95%</td>
<td>24%</td>
<td>27%</td>
</tr>
<tr>
<td>96-100%</td>
<td>41%</td>
<td>21%</td>
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Source: Aberdeen Group, June 2007
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• Closing statements
1. Cost savings become more and more necessary in the pharmaceutical world, and in the mean time quality requirements are increasing

2. Three ways to battle this strategic dilemma:
   - Focus on economy of scale
   - Supply chains / logistics optimization
   - Cooperation

   The type of cost savings to use depends on the competitive value of that activity

3. If rules and regulations are driving up costs, why compete why not cooperate?
4. The savings potential on annual supply chain costs in the pharmaceutical world are 10 - 30%

5. Whilst quality demands are high, supply accuracy typically is no higher than 95%. With the right approach this could be increased to 99.5 % and higher, maintaining the cost savings mentioned above
GROENEWOUT • A company introduction

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MAKING SUPPLY CHAINS YOUR
COMPETITIVE ADVANTAGE!
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MAKING SUPPLY CHAINS YOUR COMPETITIVE ADVANTAGE!
GROENEWOUT ● Our consulting service portfolio

Supply Chains & Logistics Consulting

Strategical
- Feasibility studies
- Warehouse tendering for building, logistics equipment & IT
- Distribution Network Studies
- Global sourcing
- Non Product Related Purchasing (NPR)
- Organizational - & functional design
- Business process (re-)design
- Key Performance Indicators (KPI's)

Tactical
- Warehouse (lay-out) design
- Plant (lay-out) design
- Lean warehousing
- Insourcing / outsourcing warehousing
- Transport tendering
- Service Level Agreements (SLA)
- Insourcing / outsourcing transport
- Benchmarks
- Sales & Operations Planning (S&OP)
- Production planning
- Collaborative Planning, Forecasting & Replenishment

Operational
- Loss Prevention & Security (LP&S)
- Facilities electrical, HVAC & temperature engineering
- Location studies & site selections
- IS selection & implementation (WMS/TMS/APS)
- Inventory Mgt.

Materials Mgt.       Physical Distribution       Supply Chains Mgt.
GROENEWOUT • Our consulting methodology

Modeling & Simulation
• CAST-dpm
• WHAT-2-STORE©
• WARE-2-STORE©
• BUILD-2-STORE©
• ABC-2-STORE©
• Automod

Business Requirements

Data gathering
Supply Chains Transparency

Benchmark
2nd-opinion
Audit
Arbitrage
Training

Project mgt.
Tender- & contract mgt.
Construction (site) mgt.
Process improvement mgt.
Transition mgt.
Change mgt.
Interim mgt.