A global analysis of supply chain trends in the health industry

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A global analysis of supply chain trends in the health industry

Abstract

• An outlook for the pharmaceutical and medical logistics market • Achieving success in the pharmaceutical supply chain • Improving efficiency along the supply chain

Disciplines

Business

Publication Details

A GLOBAL ANALYSIS OF SUPPLY CHAIN TRENDS IN THE HEALTH INDUSTRY

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UNIVERSITY OF WOLLONGONG

THE BURNING ISSUE

An Outlook for the Pharmaceutical and Medical Logistics Market

Achieving Success in the Pharmaceutical Supply Chain

Improving Efficiency along the Supply Chain
The Pharmaceutical Industry is Big

Global Sales in 2008 are expected to reach
US$735 billion
Annual rates of sales growth are slowing but still
of the order of 5% to 6%/year


<table>
<thead>
<tr>
<th>Region</th>
<th>Share</th>
<th>Region</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>45%</td>
<td>North America</td>
<td>4-5%</td>
</tr>
<tr>
<td>Western Europe</td>
<td>23%</td>
<td>Western Europe</td>
<td>4-5%</td>
</tr>
<tr>
<td>Japan</td>
<td>10%</td>
<td>Japan</td>
<td>1-2%</td>
</tr>
<tr>
<td>Australia</td>
<td>1%</td>
<td>Emerging Econ.</td>
<td>12-13%</td>
</tr>
<tr>
<td>Rest of World</td>
<td>21%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


1 China, Brazil, Mexico, South Korea, Turkey and Russia
**BACKGROUND (3)**

Pharmaceutical Companies are very profitable

<table>
<thead>
<tr>
<th>Profitability Measure</th>
<th>Pharma Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Revenues</td>
<td>14.3%</td>
</tr>
<tr>
<td>Return on Assets</td>
<td>10.3%</td>
</tr>
<tr>
<td>Return on Shareholders Equity</td>
<td>22.1%</td>
</tr>
<tr>
<td></td>
<td>4.6%</td>
</tr>
<tr>
<td></td>
<td>3.1%</td>
</tr>
<tr>
<td></td>
<td>12.6%</td>
</tr>
</tbody>
</table>

Source: Fortune 2003 results for 500 companies surveyed

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**BACKGROUND (4) ... THE TOP 10 PLAYERS**

Top 10 Pharmaceutical Companies by US Sales 2007

- **Sales (USD Billion)**: 30, 25, 20, 15, 10, 5, 0
- **Companies**: Pfizer, GlaxoSmithKline, Merck & Co, Johnson & Johnson, AstraZeneca, Amgen Corporation, Novartis, Sanofi-Aventis, Eli Lilly & Co, Abbott

Source: MM&M (May 2008, p. 46)
Background (5)

Pharmaceutical Companies are new-product compelled... but it is risky business

- The industry is highly regulated
- On average only 1 out of 5000 medicines is approved for patient use
- The average cost of bringing a new medicine to market in the 1990’s was US$802M and growing!
- The average development time for a new drug is 12–15 years
- On average only 30% of new drugs make money
- Prescription drugs account for 10.5% of total healthcare cost

Background (6)

The Pharmaceutical World is Nevertheless Changing

- "Healthcare costs have outpaced inflation in 13 of the last 17 years" (Porter & Teisberg, 2004)
- Convoluted price/rebate structure exists with poor incentive alignment between manufacturers & distributors
- Government interventions (e.g. NICE in UK)
- Expiration of patents leading to growing number of generic products
- Parallel trade in drugs where drugs are purchased in a low price country and on-sold to a high price country
- Continuation of industry consolidation
- The pharmaceutical industry’s supply chain is bloated with inventories and burdened with inefficiencies
**Summary Of Issues**

- OUTDATED SUPPLY CHAIN
- DISTRIBUTION
- MEDICINE ACCESSIBILITY
- PRICING DIFFERENTIATION
- PRICE WARS
- EXPIRED PATENTS
- SECURITY

Source: Bauer (2005); Grigoras (2008)

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**Specific Supply Chain Issues**

**The Pharmaceutical Industry's Supply Chain**

"... is characterised by clinician selected products, high inventory levels, discontinuous product flows, paper-based information flow, inconsistent technologies, inefficient buying practices, and high costs associated with the administration of contracts and rebates."

(CSC Consulting, 1996, p.25)
**SYSTEM DYNAMICS DRIVEN BY CULTURE**

- Start here
- Patent expiry, IP breaches, generic products - all drive motivation to develop and launch new products
- When new products are launched, plentiful supply is ensured in order to capture all sales opportunities
- Lack of supply chain coordination and drive for sales means bloated supply chain inventories and failed deliveries

**SYSTEM DYNAMICS – THE DETAIL**

Diagram showing relationships between:
- New Products
- Sales & Marketing
- Customer Satisfaction
- Good Quality
- Product Availability
- Invest in R&D
- Sales and Margin
- Right Plant & Equipment
- Use of Capacity
- Desired Profit
- Inventory
- Costs

Source: Adapted from Singh 2005
The Proposed Future (1)

Supply Chain Strategy is Aligned to Business Strategy

- Supply chain is redesigned to maximise distribution efficiencies
- Supply Chain Collaboration is enabled through partnerships & integrated IS
- Pharma Supply Chain is Creating & Delivering Value
- 'Lean' methodologies are extensively applied
- Full suite of end-to-end supply chain planning & scheduling processes applied
- Key Logistical activities are outsourced to 3PL/4PL

The Proposed Future (2)

Supply Chain Strategy is Aligned to Business Strategy

- The strategic issues of pricing, new product development cost management, channel to market models, product IP security and partner profit sharing all need to be sorted out and the precise strategy for each of these issues defined
- Then the model below can be completed and be the precursor to the supply chain management strategy required to support it

(Source: Gattorna, 2003)
The Proposed Future (3)
Supply Chain Collaboration is Enabled through Partnerships & Integrated IS

The Collaboration Spectrum:

<table>
<thead>
<tr>
<th>Extensive Collaboration</th>
<th>Not Viable</th>
<th>Synchronised Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Coordinated Collaboration</td>
</tr>
<tr>
<td>Limited Collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low Return</td>
</tr>
</tbody>
</table>

Many Relationships Few Relationships

Supported by competent and modern Information Systems

The Proposed Future (4)
Full Suite of End-to-End Supply Chain Planning & Scheduling Processes Used

- Many proven software applications exist today that can be used to enable the following necessary processes...

- Procurement
- Production
- Distribution
- Sales

Long Term

| Strategic Network Planning |

Mid Term

| Sales and Operations Planning |

Short Term

| Purchasing and MRP |
|--------------------|------------------|
| Master Scheduling  |
| Distribution Planning |
| Transport Planning |
| Fulfilment & ATP    |
The Proposed Future (5)

Key logistical activities are outsourced to 3PL/4PL

- 3rd Party and 4th Party Logistics providers have grown in competence since the concept was introduced into industry about a decade ago
- By now there are a number of truly capable 3PL and 4PL providers such as DHL, FedEx, UPS, Linfox, Toll
- The pharmaceutical industry could do well to consider such companies as potential partners in achieving greater channel:
  - Efficiencies
  - Reliability of delivery
  - Security over the channel

The Proposed Future (6)

'Lean' methodologies are extensively applied

![Diagram of the 'House' of Lean]

- World Class Competitiveness
- Leading & Managing Change
- Business & Supply Chain Biology
THE PROPOSED FUTURE (7)

Supply chain is redesigned to maximise distribution efficiencies

Using a combination of:
- Weighted-factor rating model
- Break-even model
- Centre-of-gravity model

Determine the optimal location of pharma distribution facilities
And marry that with Agile capabilities...

Decoupling Points:

Driven by Demand

Driven by Forecast

Raw Materials - Factory - Distribution - Customer

THE CLOSE

In the shifting pharmaceutical marketplace, "building relationships directly with patients as they become better educated and take a more active role in their own healthcare also is essential. And the industry must continue to engage the broader healthcare community in a rational and positive dialogue about the delivery of higher quality healthcare to patients at lower cost."

(Aitken as quoted in IMS Global Insights, 2008)

The underlying pharmaceutical industry dynamics are changing and the industry needs to develop and implement a sensible response to this situation... the application of robust supply chain management techniques can help the industry do this...
thank you for your time
any questions??