Hindustan Lever

Supply Chain Planning
Implementation Experience

Presented by:
Kavitha Rao
Company Overview

Corporate Purpose

Our purpose is to meet the everyday needs of people everywhere – to anticipate the aspirations of our customers and consumers and to respond creatively and competitively with branded products and services which raises the quality of life.
Company Overview: Unilever

- **Unilever’s mission**: Add *Vitality* to life
  - *We meet the everyday needs for nutrition, hygiene, and personal care with brands that help people feel good, look good, and get more out of life.*

- **World wide turnover of € 42 bn with a presence in over 100 countries**

- **Everyday, 150 m people choose our brands**
Company Overview: Hindustan Lever

- India’s largest CPG company
  - 4 times bigger than the next largest player
- Touches the lives of 2 out of 3 Indians
Company Overview: Hindustan Lever

<table>
<thead>
<tr>
<th>$ Mn</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover</td>
<td>2,190</td>
</tr>
<tr>
<td>Operating Profit</td>
<td>470</td>
</tr>
<tr>
<td>Operating Margin %</td>
<td>21.3%</td>
</tr>
<tr>
<td>Net Profit (bei)</td>
<td>390</td>
</tr>
<tr>
<td>EPS</td>
<td>20c</td>
</tr>
<tr>
<td>Surplus Cash Generated</td>
<td>380</td>
</tr>
<tr>
<td>EVA</td>
<td>310</td>
</tr>
<tr>
<td>Market Capitalisation</td>
<td>5,325</td>
</tr>
</tbody>
</table>

- Exports 12%
- Soaps & Detergents 43%
- Personal Products 23%
- Beverages 12%
- Foods 6%
- Ice Creams 1%
- Others 4%
Company Overview: Hindustan Lever

Leadership across categories

![Market Share Chart](chart.png)

Source: AC Nielsen ORC Retail Audit
Indian Marketplace

- **Urban**
  - Cities/Towns: 3700 Outlets, 1.5 million

- **Rural**
  - Villages: 627000 Outlets, 3.6 million
Distribution Network

Hindustan Lever Limited

Carrying & Forwarding Agents

Redistribution Stockist

Wholesalers

Rural Retailers

Urban Retailers

Consumer
HLL Supply Chain Environment

- 2000 + supplier and associates
- Urban Direct Coverage – 1 Mn outlets
- Rural coverage of 50000 villages
- 45 C&FAs
- 7000 Stockists
- 80 company factories
- 150 outsourcing units
Supply Chain Challenges

- **Market & Competition**
  - Need for flexibility & responsiveness

- **Product Complexity**
  - Over 500 SKUs in Home & Personal Care (+ 300 in Color Cosmetics)
  - Range from high volume (>200000 TPA) to low volume (< 2 TPA)

- **Channel Complexity**
  - Fragmented Trade
  - Emerging Modern Trade
  - Rural Channels

- **Locations**
  - Over 80 manufacturing units & 45 sales depots across the country

- **Fiscal & Regulatory**
  - Significant fiscal benefits which decide sourcing strategy
Integrated Supply Chain: Vision

➤ Continuous replenishment based on consumer off-take
  ➢ “Make today what was sold yesterday”
    • Reduce end to end cycle times
    • Shorter Time to Market

➤ Project LEAP: Major supply chain initiative in 2001
  ➢ Improvement in customer service levels
  ➢ Reduction in inventory

➤ Barriers
  ➢ Inability of the tools to handle the complexity in the supply chain
    • Scheduling and Optimization
  ➢ Supply Chain Visibility

“Business process changes leveraging on the best IT solutions”
Supply Chain Solutions

- **PROCUREMENT**
  - Medium Term
  - Material Requirement Planning
- **PRODUCTION**
  - Source Network Optimization
  - Production Planning
- **DISTRIBUTION**
  - Distribution Planning
- **SALES**
  - Demand Planning

Execution based on Replenishment:
- **Supplier Collaboration**
- **Material Call-off**
- **Factory Scheduling**
- **Depot Replenishment**
- **RS Replenishment & Collaboration**

Transaction Processes
Supply Chain Initiative: Road Map

Production Planning
Interactive Planning
Long Term Planning
Distribution Planning

2001 2002 2003 2004 2005 2006

Adexa Supply Chain Planner

Adexa Collaborative Operations Planner
Supply Chain Initiative: Resourcing

HLL Board
- Program Manager
  - Module Lead
  - Module Lead
  - Module Lead
- Business Sponsor
  - Planning Manager
  - Purchasing Manager
  - Logistics Manager

ADEXA (Product Vendor)
- Head Prod Dev
  - Project Lead
  - Project Lead
  - Project Lead

MINDTREE (System Integrator)
- Project Lead
  - SC Consultant
  - SC Consultant
  - SC Consultant
Distribution Planning

Business Process

▷ Daily Replenishment from source to distribution centers

Solution

▷ Replenish to a norm based on forward demand
▷ Equalization of service levels
  • Used in case of supply shortages
▷ Balance demand and supply
  • Transportation problem solve for least cost distribution
▷ Truck planning
  • Build full truck loads
  • Routing through intermediate points for less than truck load scenarios
## Distribution Planning

### Activity Chart

<table>
<thead>
<tr>
<th>Inputs Considered</th>
<th>Wk n-1</th>
<th>Wk n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tue</td>
<td>Wed</td>
</tr>
<tr>
<td>Previous days production plan</td>
<td>Previous days production plan</td>
<td>Previous days production plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key Activity</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
<th>Run SCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispatch Indents</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
<td>Daily</td>
</tr>
<tr>
<td>Daily Dispatch Indents</td>
<td>Dispatch Indents</td>
<td>Dispatch Indents</td>
<td>Dispatch Indents</td>
<td>Dispatch Indents</td>
<td>Dispatch Indents</td>
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</tr>
</tbody>
</table>
Adexa Supply Chain Planner

➤ Ability to model a multi-tiered supply chain
  ➤ Plant, Warehouses and DCs

➤ Choice of parameters to fine tune planning logic
  ➤ Order quantities
  ➤ Balance Order
  ➤ Sourcing percentages

➤ Business Plug-in rules
  ➤ Method selection

➤ Ability to script specific business requirements
  ➤ Truck planning using weight and volume
# HLL Supply Chain Planner Model Sizes

<table>
<thead>
<tr>
<th>Category</th>
<th>Commodities</th>
<th>Locations</th>
<th>Demands</th>
<th>Resources</th>
<th>Size</th>
<th>Solve time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>45</td>
<td>93</td>
<td>100,000</td>
<td>40</td>
<td>987 M</td>
<td>22 min</td>
</tr>
<tr>
<td>Hair</td>
<td>119</td>
<td>92</td>
<td>200,000</td>
<td>64</td>
<td>1503 M</td>
<td>32 min</td>
</tr>
<tr>
<td>Skin</td>
<td>166</td>
<td>92</td>
<td>300,000</td>
<td>125</td>
<td>1634 M</td>
<td>37 min</td>
</tr>
<tr>
<td>Color</td>
<td>233</td>
<td>93</td>
<td>500,000</td>
<td>33</td>
<td>2657 M</td>
<td>57 min</td>
</tr>
<tr>
<td>Fabric Wash</td>
<td>180</td>
<td>128</td>
<td>160,000</td>
<td>197</td>
<td>1215 M</td>
<td>29 min</td>
</tr>
<tr>
<td>Personal Wash</td>
<td>89</td>
<td>130</td>
<td>100,000</td>
<td>172</td>
<td>842 M</td>
<td>25 min</td>
</tr>
</tbody>
</table>
Production Planning

➢ Business Process
  ▶ Weekly production planning for own and sub-contract manufacturing locations

➢ Solution
  ▶ Mixed Integer Linear programming model
  ▶ Optimal sourcing based on total supply chain cost
  ▶ Modeling of demand penalties, safety cost violation cost and inventory carrying cost
  ▶ Inbound and outbound costs and fiscal benefits
  ▶ Factory batch sizes
  ▶ Time fences
  ▶ Real life constraints
## Production Planning

### Activity Chart

<table>
<thead>
<tr>
<th>Inputs Considered</th>
<th>Wk n-1</th>
<th>Wk n</th>
<th>Wk n+1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mon</td>
<td>Tue</td>
<td>Wed</td>
</tr>
<tr>
<td>Review Master Setups</td>
<td>Load latest Depot &amp; Factory data</td>
<td>Review Master Setups</td>
<td>Load latest Depot &amp; Factory data</td>
</tr>
<tr>
<td>Depot-wise demands</td>
<td></td>
<td>Depot-wise demands</td>
<td></td>
</tr>
</tbody>
</table>

### Key Activity

<table>
<thead>
<tr>
<th>Wk n-1</th>
<th>Wk n</th>
<th>Wk n+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run COP</td>
<td>Review Plans</td>
<td>Collaborate with Factories</td>
</tr>
<tr>
<td>Run COP</td>
<td>Review Plans</td>
<td>Collaborate with Factories</td>
</tr>
</tbody>
</table>

### Impact

- Firm Production Plan
- Tentative Production Plan
- Firm Production Plan
Adexa Collaborative Operations Planner

- **Unique Multi-site optimization requirements**
  - Cost optimal sourcing
    - Complexity of fiscal benefits

- **Constraints**
  - Batch sizing
    - Mixed Integer LP solve
  - Freeze production and despatch
  - Time fencing of plans

- **Long term manufacturing strategy**
  - Fixed cost, Resource and Site level modeling

- **Close partnership with Adexa Development Centre, Toronto**
  - To meet unique requirements of a multi-site CPG company
  - Engagement has been successful
    - Critical business requirements met
    - Technical & Modeling challenges addressed
Materials Planning

Business Process

- Weekly materials planning for manufacturing locations based on production plan
- Aid suppliers in planning their production to meet the materials plan

Solution

- Plan material despatch from suppliers based on factory production plans
  - Bill of Material to determine raw material and packing material requirements
- Consider supplier capacity to aid production planning
  - Method selection feature
### Materials Planning

#### Activity Chart

<table>
<thead>
<tr>
<th>Inputs Considered</th>
<th>Week n-1</th>
<th>Week n</th>
<th>Week n+1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thu</td>
<td>Fri</td>
<td>Sat</td>
</tr>
<tr>
<td>Production Indents for 3 weeks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SKU-wise Production Schedule for 3 weeks</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key Activity

- Week n-1: Run SCP
- Week n: Run SCP
- Week n+1: Run SCP

#### Impact

- Material Plan
- Scheduled Orders
Benefits from Adexa Solutions

▸ Process Rigor
  ▸ Daily automated replenishment is now well established
  ▸ Optimization – Rigorously enforced

▸ New Business Requirements
  ▸ Flexibility of the system to handle new requirements proven

▸ Service Level Improvements recorded
  ▸ Service Levels (Availability)
  ▸ Supply Chain Cost

▸ Targeting for next level Supply Chain improvements
  ▸ Service Level in the extended supply chain
  ▸ Inventories
Key Learnings

- **CHANGE**
  - Incremental Change
  - Post implementation effort
  - Sustain process rigor
  - Top management involvement

- **LEARNINGS**
  - Define KPIs
  - Measure Current Status
  - Quick Wins
  - Visibility & Understanding

- **OWNERSHIP**
  - Involve Operating managers
  - Data ownership
  - Assimilate tool complexity
  - Analytical & IT savvy

- **BENEFITS**
Specific Metrics

- **Service level**
  - Daily service level tracking
  - Fill rates

- **Inventory levels**
  - Extent of inventory above norm
  - Setting up of stock norms

- **Supply chain costs**
  - Sourcing
  - Transportation

- **Compliance**
  - Process Compliance
    - Extent of changes to Adexa generated plans
  - Despatch Compliance
  - Production Compliance
### Overall Planning Cycle

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

####JC n.1
- **Firm up JC Sales Plan**
- **Firm up Weekly Sales Plan**
- **Firm up Weekly SKU Linkage**
- **Firm up Factory SKU Linkage**
- **Transaction Data - Factory & Depot Stock**
- **Firm up Weekly Production Plan**

####JC n
- **JC Sales Plan**
- **Firm Weekly Sales Plan**
- **Weekly Sales Plan**
- **Factory SKU Linkage**
- **Firm Sourcing Percentages**
- **Firm up Sourcing Percentages**
- **Sourcing Percentages**
- **Firm Production Plan**
- **Firm up Weekly Production Plan**
- **Production Plan**
- **Transaction data - Factory & Depot Stocks, Previous Day’s Production**
- **Run Replenishment Plan**
- **Daily Replenishment Plan**

####Material Plan & Scheduled Orders
- **Run MRP**
- **Material Plan & Scheduled Orders**