Data Explosion: Redefining Metrics

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Summary

• Data explosion
  • Explosion of IT platforms and concepts
  • Volumes more data
  • Data changed our world
  • Information = value
  • Competitive balance at stake
  • IT sustaining global economic growth
• Performance improvement opportunities
  • Revenue value of information
  • Driving revenue growth
  • Cost value of information
  • Many opportunities
• From data to information
  • Core competency drives IT architecture
  • Operations focus: balanced scorecard
  • Supply chain: forecast variance
  • Innovation: thought leadership
  • Planning: charting and mapping techniques
• From information to strategy
  • 1. Converting data to information
  • 2. Converting information to strategy
  • 3. Creating value above market
Data Explosion
Data changing our world

- Innovation from outside
- Collaborative selling
- Supply networks
- Standardized subassemblies

“We’re moving towards a world where operations are network-centric. There used to be vertical silos, [but in the future we’ll] have horizontal businesses that can integrate with each other.”
- Stephen Miles, MIT
Market Capitalization by Type of Asset

- **Information Assets**: 100%
- **Property, Plant & Equipment**: 75%
- **Tangible Assets**: 50%
- **Information = value**
Competitive balance at stake

Share of World Consumption

Share of World Production

Source: Economist Intelligence Unit
IT sustaining global economic growth

Growth With and Without Information Technology

- U.S: 3% With IT, 0% Without IT
- China: 5% With IT, 4% Without IT
- India: 7% With IT, 6% Without IT
- Korea: 1% With IT, 2% Without IT
- ASEAN: 4% With IT, 3% Without IT

Source: Economist Intelligence Unit, Boston Logistics Group
Performance Improvement Opportunities
Revenue value of information

- Delivering Better Service
  - Matching Organization of Resources to Demand
  - Segmenting and Prioritizing Orders
  - Customizing product and service delivery

- Launching More New Products Faster
  - Launching New Products More Frequently
  - Launching New Products Faster

- Increasing Margins: Rapid, Flexible Response
  - Rapid Response
  - Postponement
  - Dynamic Pricing
Cost value of information

- Lean manufacturing and lean distribution
- Inventory management
- Supplier partnering
- Cross-docking and fleet rationalization
- Quality management
- E-procurement
## Many Opportunities

**IT Applications in Supply Chain Management**

<table>
<thead>
<tr>
<th>Application</th>
<th>Benefit</th>
<th>Financial Metric</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage spend</td>
<td>Spend ↓</td>
<td>Expenses ↓</td>
<td>10%</td>
</tr>
<tr>
<td>Mg. compliance</td>
<td>Spend ↓</td>
<td>Expenses ↓</td>
<td>10%</td>
</tr>
<tr>
<td>Track Equipment</td>
<td>Utilization ↑</td>
<td>ROA ↑</td>
<td>20%</td>
</tr>
<tr>
<td>Track Inventory</td>
<td>Turns ↑</td>
<td>Working Capital ↑</td>
<td>10%</td>
</tr>
<tr>
<td>Deploy Labor</td>
<td>Productivity ↑</td>
<td>Profits ↑</td>
<td>30%</td>
</tr>
<tr>
<td>Track Production</td>
<td>Cycle time ↓</td>
<td>Revenues ↑</td>
<td>5%</td>
</tr>
<tr>
<td>Track Devices</td>
<td>Availability ↑</td>
<td>Performance ↑</td>
<td>20%</td>
</tr>
<tr>
<td>Monitor Access</td>
<td>Violations ↓</td>
<td>Claims/damages ↓</td>
<td>3%</td>
</tr>
<tr>
<td>Speed X-Actions</td>
<td>Throughput ↑</td>
<td>Revenues ↑</td>
<td>80%</td>
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</tbody>
</table>
From Data to Information
# Core competency drives IT architecture

How Strategy Drives Choice of Metrics

<table>
<thead>
<tr>
<th>Competency</th>
<th>Customer Intimacy</th>
<th>Operations</th>
<th>Supply Chain</th>
<th>Marketing / Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td>Used car dealership</td>
<td>Outsourced IT services</td>
<td>Oil company</td>
<td>IT: Social networking</td>
</tr>
<tr>
<td>Time horizon</td>
<td>The moment</td>
<td>3 months</td>
<td>1 year</td>
<td>3-5 years</td>
</tr>
<tr>
<td>Metrics</td>
<td>Hit rate</td>
<td>Balanced scorecard</td>
<td>Forecast variance</td>
<td>Thought leadership</td>
</tr>
</tbody>
</table>

P/E
Operations focus: balanced scorecard

Scorecard Metrics

Boston Logistics Group's Balanced Supply Chain Scorecard

Results Metrics
- Delivered Cost/Unit
- Inventory Cost
- Production Cost
- Logistics Cost
- Packaging Cost
- Customer Service Cost
- Materials or Service Cost

Process Metrics
- % Suppliers 80% of Spend
- % Spend Largest Supplier
- % Impl. of P-Council
- % Change Unit Price
- Largest Supplier’s Cost
- % Certified Suppliers

Cost
- Cost of Quality
- Scrap Rate
- Returns and Warranty Cost
- Inspection Cost
- % Defective or Returned

Quality
- Fill Rate
- Order Cycle Time

Service
- NPI Cycle Time
- Changeover Time
- Time to Flex Up 20%
- NPI Cycle Time

Agility
- Supply Chain Cost
- % Capacity Utilization
- Equipment uptime

Asset Utilization
- Repair & Maintenance Expense
Supply chain: forecast variance

Key Metrics

<table>
<thead>
<tr>
<th>Key Indicators</th>
<th>Forecast</th>
<th>Actual</th>
<th>Variance</th>
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</thead>
<tbody>
<tr>
<td>Order Leadtime</td>
<td>▼ -2.0%</td>
<td>▼ -1.0%</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Prices</td>
<td>▲ 0.0%</td>
<td>▲ 0.5%</td>
<td>-0.5%</td>
</tr>
<tr>
<td>% SKUs in Catalog</td>
<td>▲ 3.0%</td>
<td>▲ 3.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>% to Top 10 Suppliers</td>
<td>▲ 1.5%</td>
<td>▲ 4.0%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Alerts

- Prices
- Leadtime
- Capacity utilization
- Supply
- Demand
- Etc.
Innovation: thought leadership

Success

Strategy

Consideration

Ideas
Planning: density charts

Congestion Points, 2020, with Selected Remediation Measures

Ports: 4,300

DEMAND
- Truck +58%
- Rail +47%
- Water +14%
- Air +182%

“CREATE”

Intermodal Driver Shortage

Longshoremen Shortage (2004)
PierPass

Ports: 4,000

TEU/Acre/Year (vs. 10,000+)

Ports: 3,300

TEU/Acre/Year (vs. 10,000+)

Source: Cambridge Systematics/AASHTO, Containerisation International
Planning: split box charts

Example of a Market Share Segmentation Matrix

Rolls Royce
75%
50%
25%
Pratt & Whitney
GE (CFMI)
GE (CF6)
Boeing 25% 50% 75% 100%
Airbus
MDD

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## Executing: harvey ball charts

### Supplier Comparison

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
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<tbody>
<tr>
<td>Price</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Quality</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Delivery</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>Flexibility</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Service</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>○</td>
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<tr>
<td>Speed</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Innovation</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Track record</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

● = Good/More Attractive  ○ = Bad/Less Attractive
From Information to Strategy
1. Convert data to information

Supply and Demand Imbalance

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity ($M)</th>
<th>Demand ($M)</th>
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</thead>
<tbody>
<tr>
<td>2006</td>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>$2,500</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>$3,000</td>
<td></td>
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<tr>
<td>2009</td>
<td>$3,500</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>$4,000</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>$4,500</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$5,000</td>
<td></td>
</tr>
</tbody>
</table>
2. Convert information to strategy

Families of Sourcing Strategies

- Rationalization
- Centralization of procurement
- Group purchasing

- RFx
- Global sourcing
- Auctions
- Payment terms

- E-Procurement
- Long-term agreements
- Supply chain integration
- Purchasing cards
- Portals

- Value engineering
- Standardization
- Spec simplification

Scale

Integration

Competition

Value

\[ A = \pi r^2 \]
3. Create value above the market

- Value: Lower lifecycle costs
- Integration: Reduced transactions costs
- Scale: Economies of scale
- Competition: go direct to manufacturers
Global Supply Chain Economists™

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