Lead Time as a Competitive Weapon

Geoff Fry
Oct., 2019
Agenda

• My background and current role
• Customer and industry situation for LED Lighting
• Typical supply chain in build-to-order light manufacturing
• Critical problems at the beginning of the journey
• Mining for the solutions
• The new way of thinking about what and how we sell to customers
My Background

• MBA in Production and Purchasing Mgmt, aka Supply Chain Management
  • Bowling Green State University

• Worked +20 years in Supply Chain roles
  • Mostly Sourcing (Commodity Mgmt), Purchasing, Planning, and Inventory Mgmt
    • Also, depending on the role, Supplier Quality, Warehousing, Traffic / Logistics, Inside Sales, Compliance Engineering, and Product Management
    • Area of expertise is change management, IT implementations, and innovative supply chain processes
    • Industries are always high tech, but split between distribution and light manufacturing

• Mostly global leadership roles
  • Lived and worked in the US, England, Germany, and Hong Kong

• Currently, the Global VP of Supply Chain at Cree Lighting, a company of IDEAL Industries
The Situation for LED Lighting

Marketplace and Competitive Situation
- Rapid growth
- Limited competition
- Limited variety
- Focus on innovation
- Product launch speeds
- Process for high volume, low mix

Supply Base Situation
- Limited supply base with specialized capabilities and co-development practices
- Investment in the technology and capacity with the supplier
- Long lead times and no attempt to manage lead times
### The Situation for LED Lighting

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- Many product options
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- Need efficiency and consistent processes
- Sales declines
- Offshore competition
- Significant optionality
- Costs dropping
- A commodity product
- Need low volume, high mix processes

**Supply Base Situation**
- Limited supply base with specialized capabilities and co-development practices
- Investment in the technology and capacity with the supplier
- Long lead times and no attempt to manage lead times
Lead Time Profile

- As in most light manufacturing companies, the vast majority of lead time is supplier lead time and transit times
  - Especially for offshore suppliers, where transportation time can be 5-8 weeks
- Our production team has dramatically reduced assembly time
  - Very efficient and agile operation, plus available capacity due to decreasing volumes
Lead Time and Material Cost Profile

- Cost of the material increases, as it moves through the supply chain towards the customer
  - More inventory can be available at a lower cost by stocking parts at a purchased part level
  - This also serves to keep the inventory available to build a wide variety of configurations
The Lore I Heard in the Beginning

We cannot forecast, because our demand is too erratic across too many SKUs.

Our customers never know what they want until the last minute and they will buy based on availability.

We have too much inventory but never the right fixtures for our customers’ installations.

The offshore competition is gaining market share through dramatically lower costs.

Our primarily local supply base cannot compete on cost with offshore competition.
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Maybe the problems are actually the solution
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• The customers are willing to pay for shorter lead times and high optionality
• We have a local supply base that could support very short lead times
• No offshore, low cost competitor could ever stock the right inventory
Mining for the Solutions

Identify the end item SKUs that can be forecasted

24,000 active end item SKUs, most sold only once in year  Only 42% of sales on steady runners
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24,000 active end item SKUs, most sold only once in year

Only 42% of sales on steady runners

Analyze BOM structure and purchased part demands
Far fewer active purchased parts than end item SKUs
83% of supplier spend on steady runner purchased parts

- Annual Spend of Buy Items based on CoV Range
- Annual Sales based on the Range for the CoV

Low Variability
High Variability
Mining for the Solutions

Identify the end item SKUs that can be forecasted

- 24,000 active end item SKUs, most sold only once in year
- Only 40% of sales on steady runners

Analyze BOM structure and purchased part demands

- Far fewer active purchased parts than end item SKUs
- 83% of supplier spend on steady runner purchased parts

Identify steady runner end items for 5 day customer LT

- Eliminate Finished Goods Inventory (FGI)
- Ensure all critical parts on BOM with reduced lead time
Mining for the Solutions

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- Identify steady runner end items for 5 day customer LT
  - Eliminate Finished Goods Inventory (FGI)
  - Ensure all critical parts on BOM with reduced lead time

- Review all end items composed of short lead time purchased parts
  - 10 to 1 fan-out of purchased parts
  - Many end items can be built from short LT parts
Changing the Way We Think

• Do not think about the end item SKU (BOM) and how our customers order
  • Focus on the sub-assemblies and purchased parts, and enable configurability

The Big Mac Customer Experience
• Fixed ingredients (end item BOM)
• Made to Kanban level before customer orders

The Chipotle Customer Experience
• Infinite variations possible from common building blocks (no end item BOM)
• Assembled to exact customer requirements and interactive ordering process
Changing the Way We Think

• One size fits all….or?
Changing the Way We Think

• One size fits all….or

ONE SIZE DOESN'T FIT ALL
Changing the Way We Think

• Break our products down and manage them according to the demand profile
  • Quote lead time according to demand profiles, not product families
  • Quote 5 days on steady runners SKUs with purchased parts supported by supplier short lead time programs
  • Treat sporadically ordered items as specials, quoting customer lead time as full supply chain lead time

<table>
<thead>
<tr>
<th>Planning</th>
<th>Supply Chain</th>
<th>Material Handling</th>
<th>Product Process</th>
<th>Customer Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Flow</td>
<td>Accurate forecast to manage capacities and FGI levels</td>
<td>All materials supported with Kanban / JIT programs</td>
<td>All material delivered to floor by supplier</td>
<td>Dedicated lines with continuous flow of assembly</td>
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<tr>
<td></td>
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<td></td>
<td>Lead time = 0 with FGI inventory positioned in regional warehouses</td>
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<tr>
<td>Steady Runners</td>
<td>Manage Work Orders and Planning through Kanbans at critical points</td>
<td>Materials supported with Kanban / JIT programs or large Safety Stocks</td>
<td>Common parts with floor-stocking; kitting large or less common parts</td>
<td>Replenish levels of FGI with Kanban</td>
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<tr>
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<td>Lead time = 5 days, 10 days w/volume to stabilize flow</td>
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<tr>
<td>Sporadic Runners</td>
<td>Manage Work Orders and Planning through Kanbans at critical points</td>
<td>Materials supported with Kanban / JIT programs or large Safety Stocks</td>
<td>Some parts with floor-stocking; kitting large or less common parts</td>
<td>Build to order, assuming high raw material availability</td>
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<tr>
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<td></td>
<td>Lead time at 4 weeks or less, but no or limited FGI</td>
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<tr>
<td>Infrequent Demands</td>
<td>Plan as build to order and use only work orders to drive demand</td>
<td>Buy parts to customer demand at full lead time, unless used on common assembly</td>
<td>Kit full Work Order, pick from warehouse</td>
<td>Build to order based on Work Orders</td>
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<tr>
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<td>No FG inventory; Quote full lead time</td>
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Changing the Way We Think

- Break our products down and manage them according to the demand profile
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  - Quote 5 days on steady runners SKUs with purchased parts supported by supplier short lead time programs
  - Treat sporadically ordered items as specials, quoting customer lead time as full supply chain lead time

### Planning
- Accurate forecast to manage capacities and FGI levels

### Supply Chain
- All materials supported with Kan Ban / JIT programs

### Material Handling
- No material delivery by floor by supplier

### Product Process
- Dedicated lines with continuous flow of assembly

### Customer Visibility
- Lead time = 0 with FG Inventory positioned in regional warehouses

#### Continuous Flow

<table>
<thead>
<tr>
<th>% of SKUs / Sales</th>
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<tbody>
<tr>
<td>0 %</td>
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#### Steady Runners

<table>
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<th>% of SKUs / Sales</th>
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<tbody>
<tr>
<td>6 % / 42%</td>
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#### Sporadic Runners

<table>
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<th>% of SKUs / Sales</th>
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<tr>
<td>17 % / 30%</td>
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#### Infrequent Demands

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<th>% of SKUs / Sales</th>
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<td>77 % / 28%</td>
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Key Steps for the Supply Chain Team to Drive Competitiveness

• Start with the customer
  Ensures the customers see and feel your lead time reduction efforts

• Break-down your business according to predictability
  Structure the business processes around the different demand characteristics of your products

• Find the critical inflection points in the chain
  Identify where to put buffer for the biggest impact

• Focus on the supplier-facing supply chain
  Lead time is normally 80% supplier lead times

• Ensure supplier lead time programs impact the customers’ lead times
  Various purchased parts may not change a customer’s end item SKU lead time
Current Status after 10 Months

• Quoting 5 or 10 day lead times on several major product families
  • ~25% of total revenue, or about 40% of domestically produced products

• Significant use of short lead time programs with suppliers
  • Increased parts with <3 week lead time from high 30% to low 60% of spend
  • All critical parts on 5 and 10 day end item SKUs supported with Min-Max, VMI, Kanban, and other short lead time programs

• Increased customer and supplier on-time delivery
  • Both increased from low 80s to mid 90s

• Improved inventory turns
  • Working inventory decreased by about 20%

• Must have a focus on supplier quality
  • There is no safety net, when there is a quality problem

• All of this done, while still driving cost savings

And the journey continues...
Questions?

Thanks

Geoffrey Fry
Cree Lighting

Connect with me on LinkedIn, where I will be publishing small articles on common supply chain problems and how my team worked to solve them