Creating a new manufacturing and distribution strategy

How KPMG assisted a global diversified industrial manufacturing conglomerate
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The issue

Note: Industrial Inc. represents KPMG LLP’s (KPMG) client, a FORTUNE 500 global diversified industrial conglomerate with multiple business units serving a variety of sectors.

Industrial Inc. had been aiming to grow its HVAC parts and components division through organic growth and targeted acquisitions. After its latest acquisition of ABC Co., Industrial Inc. wanted to take a closer look at the manufacturing and distribution strategy of the target firm to realize efficiencies and reduce operational costs. Industrial Inc. also wanted to leverage ABC Co.’s market-leading position to expand their market share in a fairly commoditized environment through a more efficient supply chain while meeting exceedingly strict customer requirements (e.g., shorter lead times, “Made in USA” products, etc.).

ABC Co. has 30-plus manufacturing facilities in North America composed of four major business units created through a number of acquisitions. Its supply chain served a wide variety of customers (e.g., construction sites, retailers, OEMS, etc.), with the majority of the demand being made-to-order products with specific logistical challenges. The previous owners had not focused on integrating the business units to take advantage of potential synergies in manufacturing and distribution.
Industrial Inc. leadership hired KPMG to understand the key cost drivers in ABC Co. and identify potential cost savings by reducing ABC Co.’s manufacturing and distribution footprint while maintaining or improving customer service levels and supporting a 30 percent estimated growth in sales over the next five years. ABC Co.’s previous owner had already embarked on a “localized” (targeted specific facilities) manufacturing and distribution footprint rationalization that focused on labor arbitrage between the United States and Mexico while KPMG’s approach focused on a holistic approach to evaluating the manufacturing/distribution footprint across the North America region that considered key operational/business constraints (e.g., lead times to customers), leveraged manufacturing efficiencies across sites and business units (e.g., common technology, processes), and leveraged transportation/distribution efficiencies across the network.
Our approach

Creating a new manufacturing and distribution strategy can be a daunting task for any organization to undertake, especially when past integration issues (e.g., technology platform integration) have not been fully resolved. Based on experience with clients across industries, KPMG has developed an approach to manufacturing and distribution strategy that helps companies transform the way they make and deliver their products in an environment of customers increasingly requiring strict lead time adherence and customized offerings. Recognizing the scale of the change Industrial Inc. was seeking, KPMG recommended an integrated four-component approach to designing more efficient manufacturing and distribution operations and sustaining the value delivered.

Overall approach to product cost optimization

1. **“Should cost”**
   - Cost reduction achieved by performing at top quartile level (internal productivity benchmarks)

2. **4-wall improvements**
   - Cost reduction achieved by implementing “4-wall improvements” within a plant

3. **Footprint optimization**
   - Cost reduction achieved by relocating production/distribution to new location to reduce overall labor/freight costs

Increasing operational risk/capital outlay

Product cost optimization levers
Understand current manufacturing and distribution strategy. Building a robust baseline is one of the most critical success factors for such engagements. This starts with a substantial effort on collecting and reviewing all transactional data needed for the analysis. The team then spent time understanding the overall operating model that encompasses manufacturing strategy (products, processes, technology, and locations) and distribution strategy (colocated versus stand-alone distribution, network footprint, transportation strategy). The KPMG team conducted interviews, collected and analyzed data, and created a suitable framework to display how customers, suppliers, manufacturing plants, distribution centers, and freight providers shaped ABC Co.’s cost structure. This baseline would serve as an input into the network optimization model but also as a measuring stick to compare any recommendations against and identify savings opportunities.

Key complexity drivers for ABC Co.

The financial baseline was enhanced by detailed production cost/economics modeling in order to determine a comparable cost per unit for each manufacturing facility and product group. This cost model served as an input for the network models and broke out each per unit cost into its main components (direct labor, variable overhead, and fixed overhead). Effort involved required analyzing, merging, and validating multiple sources of data given significant product portfolio complexity and multiple cost accounting standards across business units.
Develop future manufacturing/distribution network strategy. Leveraging advanced analytical tools, the KPMG team created a baseline model of ABC Co.’s current manufacturing and distribution network that accurately reflected all manufacturing plants, distribution centers, product flow volumes, and total costs/financials. Once the baseline was completed, the integrated team designed a set of scenarios to compare against the baseline models. These scenarios were executed in the model in order to estimate potential cost savings versus the baseline along with impacts to customer service levels, plant and distribution center complexity, and production allocation between the United States and Mexico.

**Product aggregation methodology**

<table>
<thead>
<tr>
<th>Current State</th>
<th>73 Production Cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>BU 1</td>
<td>15 Cells</td>
</tr>
<tr>
<td>BU 2</td>
<td>25 Cells</td>
</tr>
<tr>
<td>BU 3</td>
<td>5 Cells</td>
</tr>
<tr>
<td>BU 4</td>
<td>28 Cells</td>
</tr>
</tbody>
</table>

**Consolidation Criteria**
Criteria was applied to the 73 cells to identify commonalities among them.

A. 39 out of 73 cells were grouped into 6 groups that share very similar processes.

- Group 1
- Group 2
- Group 3
- Group 4
- Group 5
- Group 6

B. Remaining 34 cells were grouped into 8 groups based on various factors.

- Other Factors
- Technologies
- Production Capabilities
- Production Processes
- Product Families
Evaluate operational efficiency improvements within a manufacturing/distribution facility.

Initial findings pointed to significant benefits originating from the manufacturing and distribution network redesign. The KPMG team conducted a quick assessment of ABC Co.'s manufacturing operations within the four walls of the plants. Focus areas for this assessment were:

1. Potential product segmentation (into high and low velocity)
2. Production line optimization
3. Product design optimization (by identifying common components and exploring postponement opportunities)
4. Manufacturing complexity reduction

As part of this work stream, KPMG conducted a product cost optimization ("should cost") analysis that involved the development of internal benchmarks (comparing all facilities in the network) to assess their relative performance on direct and indirect labor costs and variable and fixed overhead costs. This comparison would then allow the client to reduce their operating costs by improving efficiency levels through the adoption of the “best performing” plant’s standards. Cost reduction opportunity was identified by estimating the gap between the top performing plant and each of the remaining plants for all of the major cost components (direct and indirect labor costs and variable and fixed overhead costs).

Identify the right set of footprint options, a detailed business case to support implementation, and a high-level implementation road map. Leveraging an agreed-upon selection framework and outputs from the network model, a recommended scenario was selected. The KPMG team then developed a business case for change that estimated high-level cost and benefits of pursuing the recommended scenario. Along with the quantitative evaluation, the team also documented any risks and interdependencies relevant to the recommendation. Finally, with the help of the client team, an implementation road map was created, which considered dependencies with parallel projects underway, resource constraints, and Industrial Inc.’s past experience with similar transformations.
How KPMG helped

Industrial Inc. set some ambitious objectives for the KPMG team, which included:

- Identifying and quantifying optimization opportunities for ABC Co.'s manufacturing and distribution network considering:
  1. Commercial needs
  2. Customer service levels
  3. Manufacturing capabilities
  4. Process improvements
  5. Product design improvements
  6. Demand variability and projected growth
- Understanding implications of network optimization to supply chain organization, operating lead time, and customer service levels (delivery lead times)
- Developing a strategic road map to provide a pathway for Industrial Inc. to move ABC Co. closer to an “optimal” manufacturing and distribution network.

In order to achieve this, KPMG laid out a tested framework tailored to the client’s specific needs, environment, industry, and vision that combined analytical know-how with KPMG’s previous work on similar engagements.

With no time to lose, the KPMG team began collecting all the relevant primary data from key functions such as finance, human resources, manufacturing, and distribution/logistics. In parallel, the KPMG team conducted numerous interviews with the sales and marketing teams across business units to gain an understanding of the customer requirements and competitive landscape. Past studies and previous work performed by ABC Co. or third parties was collected to identify relevant information for the manufacturing and distribution strategy work.

Once the data gathering process was complete, the team proceeded to validate the initial findings and hypotheses with key client stakeholders. Given the history of the company (growth through acquisitions, independent business units) data had to be normalized in order to create an acceptable baseline model. At the same time, workshops were conducted to create suitable scenarios for ABC Co.’s future state manufacturing and distribution network, which were to be tested using the analytical network model.

Once the different scenarios were modeled, a series of workshops were held to challenge the findings and identify, using an agreed-upon framework, the “best” scenario. The selection of the recommended scenario had to consider not only potential savings and costs of implementation but also ease of implementation and alignment with Industrial Inc. and ABC Co.’s vision.

In a parallel work stream, part of the KPMG team conducted a series of manufacturing plant and distribution center visits, both in the United States and Mexico, aimed at identifying operational improvements within the plants. This work stream also explored potential product design and SKU rationalization opportunities for selected product lines. This pilot study yielded limited potential savings but served to instill confidence into Industrial Inc.’s management that ABC Co. was already extracting value from line optimization and product design for their biggest selling products.
The results of the analysis confirmed the hypothesis that ABC Co.’s manufacturing and distribution network could be realigned to unlock synergies and reduce operating costs while maintaining customer service levels and be positioned to support a 30 percent growth in sales over the next five years. The recommended scenario proposed the closure of 3 manufacturing facilities and selected production volume shifts across plants to end with a network of 31 manufacturing facilities and 5 distribution centers, which would yield annual run rate savings of around 3% of addressable costs. Additionally, the team identified an opportunity to further reduce ABC Co.’s addressable costs by 8 percent through operational improvements, which would bring all plants to a similar performance and productivity level. Thus, the total savings opportunity identified yielded potential savings representing 11 percent of the addressable cost base.

Additionally, KPMG identified a longer-term opportunity to further consolidate the manufacturing and distribution network around 22 “strategic” manufacturing locations and 5 regional distribution centers. Highlighting this strategic network served a dual purpose: (1) ABC Co. could make key investments in these locations (e.g., IT systems, capacity expansion) with confidence that these facilities would not have to be abandoned and (2) conduct further analysis to unlock additional savings once the initial transformation was completed.
Manufacturing/distribution network strategy

Supporting growth and customer satisfaction through a cost-efficient manufacturing and distribution network

What KPMG did

Financial and operational baseline

- KPMG collected and analyzed multiple sources of data to create an accurate model of ABC Co.’s manufacturing and distribution network, which was used to conduct scenario analysis and identify optimal network options that were both more cost-effective and realistically attainable.

- Developed product cost models, from multiple data sources, for all product groups in order to have comparable data points in terms of labor, variable overhead and fixed overhead costs per unit at each production and distribution facility. These cost models served as a key input into the network baseline and scenario models.

Manufacturing and distribution network strategy

- Working with Industrial Inc.’s and ABC Co.’s leadership, KPMG conducted a series of workshops to validate findings and reach agreement on the go-forward strategy. The collaborative approach ensured buy-in from all relevant stakeholders.

- Leveraged KPMG’s past experience with similar engagements across industries to provide relevant analytical and prioritization frameworks in order to more efficiently conduct workshops and generate useful insights.

- Identified key constraints and considerations that would influence the network alternatives, which included shipment profiles (e.g., customer pick-ups versus delivered), union-made/Made-in-USA requirements, and “quick ship” programs.

Motivating factors

- Industrial Inc. had recently acquired ABC Co. and was looking to rationalize operations and reduce costs before fully integrating it into the corporate umbrella.

- ABC Co. was in itself formed through mergers and acquisitions, resulting in four independent business units with distinct manufacturing and distribution networks and limited synergies.

- Competition was threatening some of ABC Co.’s key markets as ABC Co.’s performance (in terms of delivery lead times and customer service levels) had been slipping.

- Industrial Inc. wanted to generate a quick return on their investment while deeper synergies were explored.

Key results

- Produced a set of product cost models at the product group level for each facility and business unit, which allowed for an “apples to apples” cost comparison providing the client with enhanced visibility into their cost structure at the product/location level.

- Fact-based analytical methodology for production and distribution network design yielded support from relevant stakeholders for network transformation.

- Identified and proposed a network of 31 manufacturing facilities and 5 distribution centers and other operational improvements, which would yield annual run rate savings of 11 percent of addressable cost base.

- Proposed a high-level, long-term strategic footprint of 22 facilities and 5 distribution centers to further reduce cost and complexity.
Operational efficiency improvements within a manufacturing/distribution facility

What KPMG did

Product complexity versus value of variety

- Conducted a series of manufacturing plant and distribution center visits to identify potential process improvements through production line optimization.

- Analyzed sales data for two pilot product groups to identify potential SKU rationalization and product segmentation into high/low velocity SKUs for more efficient manufacturing.

- Assessed pilot product groups for potential design modifications, which could yield consolidation opportunities across raw materials and components to reduce cost, lead times, and complexity.

"Should cost" production cost optimization

- Developed internal benchmarks around direct and indirect labor costs and variable and fixed overhead costs to identify the top performing plants in each cost component. These benchmarks were used to create a "should cost" structure to serve as a target to drive operational efficiencies translating into reduced operating costs.

Motivating factors

- ABC Co.’s strategy was to manufacture everything their customers requested, resulting in a very high SKU proliferation and a very long tail of rarely ordered SKUs.

- Industrial Inc. wanted to ensure that manufacturing processes and production lines were operating efficiently and cost-effectively.

- ABC Co. wanted to explore the opportunity to modify product designs to decrease lead times and reduce costs.

- The company’s 30-plus manufacturing facilities operated at varied degrees of efficiency with disperse costs to produce the same products.
Key results

- Assessment was valuable as it provided insights into what drives complexity and variation in the manufacturing plants.

- ABC Co. was already extracting value from line optimization, which resulted in a smaller incremental benefit opportunity for product segmentation (to influence “systemic” and “realized” costs).

- Identified a larger opportunity in addressing “inherent” costs, which can be tackled through design optimization and product rationalization but required further exploration:
  » Proliferation of SKUs and product models across multiple generations that are not retired
  » Standardization of components across platforms
  » Substitution of one platform for another without compromising quality and function
  » Simplification of design through postponement and subassembly
  » For the pilot products, a large number of SKUs (80–95 percent) make up the bottom 20 percent of sales, indicating a large tail

- Through “should cost” adoption, the client could reduce its manufacturing costs by 8 percent by leveraging the “best performing” plant’s standards.