Strategic Sourcing Throughout the Product Lifecycle: Balancing Competitive Costs with Innovation & Speed to Market

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The pressure to get products to market can be extreme, especially in the heavily competitive and innovation-driven manufacturing industry. Engineering departments are faced with designing a quality and almost fool-proof product under tight timeframes and strict regulatory restrictions. Not only are they asked to manage costs with Design for Manufacturing and Assembly (DFMA) programs, production teams insist on quality considerations while operating the facility at minimal cost and timescales.

Marketing and Sales insist on aesthetics and covering as many applications and customer bases as possible, while Regulatory wants to rein in the possible applications about Human Factors Engineering (HFM) components such as ergonomics and the user-centered design - even before industry-specific requirements and guidelines (such as 510(k) for the FDA) are mentioned. On the other hand, the product still has to be designed for testability, such as biocompatibility, electromagnetic compatibility shielding, thermal stability, and of course maintenance or replacement parts (e.g., Field Replaceable Units (FRUs)) and upgradability factors of critical modules and End of Life (EOL).

In this environment, it’s at once both surprising and not surprising that major products go to market with significant, and sometimes dangerous, defects. But even in less extreme circumstances, the costs incurred throughout the product lifecycle can increase unsustainably with so many “cooks in the kitchen.”

When approached in a rational and systematic manner, each factor affecting the design can be fulfilled and optimized through an iterative process; but the big challenge is also meeting the aggressive timeframes mandated by the management teams, and ensuring the end result is still profitable.

Enter the Strategic Sourcing and Procurement (SS&P) Organization. By getting involved in and even leading key activities throughout the product lifecycle instead of simply being asked to “go and buy the materials,” SS&P can facilitate the process and add value for all key stakeholders. By bridging the gap in understanding between engineering, manufacturing, marketing/sales, and the management teams - and speaking a common language - Strategic Sourcing can help shorten the development timeframe and meet cost targets to make the design of a quality product in a competitive market a repeatable reality.
There are many nuances that individual companies add to their understanding of the product lifecycle (PLC), but the traditional sales-focused model usually resembles the following:

There are several stages in the lifecycle:

**Introduction**
- Low Sales
- High Costs
- No Profits

**Growth**
- Increasing Sales
- Reducing Costs
- Some Profits

**Maturity**
- Constant Sales
- Reducing Costs
- Increasing Profits

**Decline**
- Reducing Sales
- Constant Costs
- Reducing Profits

First, the product makes its debut, and since it hasn’t had time to become popular, it experiences low sales. Costs are higher with no revenue to offset production, and the company waits with bated breath for the next phase. In the Growth phase, momentum builds as sales increase and costs begin to go down. At the grand Maturity phase, sales are constant and profits really begin to hit. Companies hold onto this for as long as they can but sooner or later, the Decline phase begins. Costs have stabilized but fewer and fewer sales cut into profits, and eventually the product enters obsolescence and is replaced as promotional support is withdrawn and service is discontinued.

In this model, Strategic Sourcing is usually most likely to be involved, somewhat as a “necessary evil,” during the growth and maturity stages of the product’s life to reduce costs as production volumes are increased. In the classic analogy – If we can save 10 cents on a capacitor, we can save $10,000 on the production run of 100K units. Strategic Sourcing may also get involved to help reduce the overall costs of an established product by partnering with a contract manufacturer and opening-up the company’s time for New Product Introduction (NPI) and development work. Some companies even progress to the point of taking the burden of manufacturing off their shoulders completely and recast the business as a design house.

But, there’s much more value to be derived from Strategic Sourcing breaking out of this shell, and we can illustrate this point in a number of ways by considering a more holistic product lifecycle that considers the engineering activities as well as the sales activities.

**THE STRATEGIC SOURCING-ENABLED PRODUCT LIFECYCLE**
1. MARKET NEED - A.K.A. IDEATION PHASE

This is the phase where the product is conceived, and where many costs are built into the product before it even exists in physical form.

When establishing the Market Need, a thorough understanding of the competitive landscape and market pricing can provide key guidance for product placement and feasible manufacturing cost targets. This is the value Strategic Sourcing and Procurement can bring – enabling manufacturers to understand the market for material/functional design considerations, evaluate their current contract engineering relationships, and determine the best approach to balance costs with technical considerations.

CASE STUDY – IMAGING MODULES

The US division of a global medical imaging manufacturer needed to re-evaluate their design engineering relationship with a contract engineering firm due to escalating costs, IP concerns, and excessive volume commitments. Struggling to reach consensus and manage the process from both a technical and business perspective, the manufacturer engaged with Source One to review the current commitment, determine competitiveness, and define a roadmap for future engagements.

By collaborating closely with the Engineering group, Source One was able to define the core criteria and design parameters that were driving costs, and create a more objective bid package that did not clearly favor or depend on the incumbent contractor. Source One then utilized our internal expertise and supplier network to engage with the market and determine alternate design costs and gauge supplier competitiveness.

With a clear picture of internal capabilities, competing projects, existing relationships, and the current state of the market, Source One was able to provide a cost-centered comparison of options for existing engineering contracts and an integrated roadmap for future engagements which considered both the technical capabilities and cost competitiveness of the supply base. With this insight, the manufacturer ultimately settled on an approach to purchase the necessary volumes at different intervals for the best available price.

2. PRODUCTION PHASE

In this phase, the product’s construction and component parts are established, typically by engineering with little to no input from Strategic Sourcing and Procurement. But during this Design phase, SS&P should be engaged to begin supplier identification, identify opportunities to localize designs to low cost regions, and guide the Engineering teams through the off-the-shelf (OTS) commercial offerings to ensure a cost-competitive and sustainable initial design. By utilizing the experience and insights of manufacturers who have already successfully addressed these challenges with similar customers (and are more than willing to share their knowledge to expand their business opportunities), SS&P can take the heavy burden of “getting everything right” off the engineering team.

CASE STUDY – BACK BRACES

A manufacturer of spinal orthotics products was looking to identify and localize a supply base in Mexico for the production of several new product lines, while identifying cost reduction opportunities in offshore markets where existing products were being currently manufactured. Lacking market knowledge and an established supply base directory for such projects, the company approached Source One to identify competitive suppliers that would meet with their qualitative requirements, including but not limited to providing Design for Manufacturing (DFM) services.

Using an extensive supply directory built upon previous similar projects, Source One went to market and identified potential suppliers that would bring value to the client from both a cost competitiveness and quality of service offerings standpoint. The client was able to select suppliers in Mexico and other markets who provided recommendations on commodities and manufacturing processes such as yarn, weldable fabrics, RF Welding, and Injection Molding at a competitive price, meeting with their objectives. This process also enabled the client to identify an average of 30% savings on fabric material and 20% savings on injection molded part of existing products.

In addition, Source One’s market data interpretation provided the client with a valuable knowledge of near-shore and off-shore commodities and manufacturing markets, useful for the manufacturing phase of their on-going projects.
The Manufacturing Phase is typically where Strategic Sourcing and Procurement groups are “allowed” to get involved. The product has been designed, and now it’s time to find the suppliers who are going to provide the materials and assembly. SS&P tries to secure cost savings here given increased production volumes and clearly visible cost impacts of each component within the initial design of the device. The most common techniques to lower the costs of each component are consolidating the supply base and leveraging higher volumes with existing suppliers.

But SS&P can achieve even greater savings by expanding on existing component opportunities to include the Engineering team’s insights into critical and non-critical component selection, and leveraging DFM services provided by fabricators to reduce component count and increase production efficiencies in order to more than double original projections in most cases.

CASE STUDY - CONTRACT MANUFACTURING

A global microscopy manufacturer was looking to lower the overall costs of manufacturing operations with five existing product lines and transition two product lines from European/Asian to US managed manufacturing operations.

Due to the complexity associated with the scale of the project and mounting pressure from their parent company to achieve savings targets, the manufacturer engaged with Source One to tap our extensive engineering subject matter expertise and bridge the widening gap between management, engineering, and the overwhelmed supply base. With our team’s unique background in both Engineering and Procurement, along with the ability to speak a common language with all parties, we were able to set a realistic timeline and cost savings goals with management, then manage the outsourcing RFP process with the nation’s top contract manufacturing suppliers.

Our approach:

- Parse out the distinct phases of the sourcing process and segmented it for the client so they could understand the focus of each stage and therefore develop realistic timelines and set internal and external management expectations.
- Develop best practices for structuring large technical bid packages.
- Streamline sharing complex specifications with suppliers, then enabled management of the bid process with the technical team within expected timeframes.
- Effectively analyze the market to clearly present opportunities and challenges to the management team so they could make an informed decision and foster a long-term partner relationship with the final set of contract manufacturers.

Through these efforts, the client became familiar with standard industry practices and processes, adapted an industry-focused outsourcing strategy, became more competitive in their market by reducing manufacturing cost in excess of 12%, and freed up Engineering resources for New Product Introduction projects to sustain their market leadership position.

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After a mature product establishes a concrete market presence, cost considerations inevitably shift from market penetration to maintenance updates/upgrades to ensure continued functionality, and customer satisfaction. In this phase, the Sourcing and Procurement team is usually entrusted with maintaining stable inventory levels and managing relationships with existing suppliers.

But as unforeseen issues with initial design begin to manifest, the company must secure replacement parts such as Field Replaceable Units (FRUs) and Field Programmable Gate Arrays (FPGAs) that can easily be replaced or reprogrammed to fix system failures and rollout system updates. But in an effort to identify the most convenient replacement solution, without the involvement of Strategic Sourcing – there may come a high cost that ultimately eats into profitability. Strategic Sourcing can help sustain the fidelity of the existing system while factoring in sub-assembly design, production, and service considerations to maintain the finished units at a competitive price point.

**CASE STUDY – FIELD REPLACEABLE UNITS**

A global medical device manufacturer needed to lower the mounting costs associated with service oriented Field Replaceable Units (FRUs) while maintaining the current overall device design to ensure backwards compatibility.

The manufacturer engaged with Source One to research alternate materials and designs for their current FRUs while maintaining ease of use and durability. Source One supported the internal team by utilizing our supplier network to engage with contract manufacturers with industry specific expertise who were able to evaluate the original design and consider footprint reduction, alternate materials, and service procedure factors to reduce the overall cost of the unit.

By going to market with an existing design, Source One was able to navigate a landscape of competing considerations to coordinate the manufacturer’s efforts to maintain an existing design and reduce costs with feasible proposals for alternate designs which maintained fidelity and ensured backwards compatibility within the overall device.

“Strategic Sourcing can help sustain the fidelity of the existing system while factoring in sub-assembly design, production, and service considerations to maintain the finished units at a competitive price point.”
5. PRODUCT END OF LIFE (DECLINE)

With advancing technologies and shifting consumer demands, a successful product will reach End of Life (EOL) and be replaced with the next generation of the device that better meets the customer’s current need. At this stage, Strategic Sourcing is usually simply managing and buying stock according to operational forecasts. But to ensure a smoother transition process, Strategic Sourcing can also work closely with manufacturers and distributors to manage the qualification of substitute components, transition to alternate technologies, and establish safety stock while alternatives are tested and throughout the life of the transition.

CASE STUDY - CAMERA PARTS

A global Original Equipment Manufacturer (OEM) with operations facilities across North America, Europe, and Japan needed to manage the product redesign process of a solution that included End-of-Life (EOL) components. This solution utilized a printed circuit board camera featuring a charge-coupled device (CCD) sensor. Plans were underway to begin product redevelopment, and key concerns included whether to stay with a CCD sensor or move to a more common and cost effective complementary metal-oxide semiconductor (CMOS) sensor, as the industry transitioned to the new technology. Additionally, the engineering team responsible for the redevelopment had to determine if a replacement’s dimensions, mounting points, and connector placements would require more extensive redesign to the solution as a whole.

However, the manufacturer had not identified on-hand inventory of the EOL camera components, and did not track product availability among the incumbent supplier base. This state of uncertainty created the threat of either over-committing to high inventory levels, leading to higher upfront purchase and storage costs, or risk production shortages if inventory levels were not sufficient.

The firm turned to Source One for assistance in managing inventory levels of these EOL camera components to sustain overall product life cycle profitability during the redevelopment process. Additionally, Source One was tasked with identifying viable alternative components that could be implemented without requiring significant changes to the end product as a whole. Source One was able to:

- Define critical future product development time tables by forecasting production requirements and tracking available supply from among key suppliers.
- Develop a Scope of Work detailing the technical requirements for replacement components. The primary goal was to identify parts that required limited or no development changes to the overall product lines.
- Work with client and supplier engineering resources to maintain EOL inventory levels while vetting modern replacement components in parallel.

With Source One’s help, the client secured enough stock for a five year span, which aligned with demand level forecasts. The client was also provided a vetted supplier shortlist that detailed viable replacement components. Data on sensors, dimensions, and other critical engineering information were available for reference during the redevelopment process.

As a result of this initiative, the client was able to develop a timeline for future product redesign while also avoiding any inventory over-commitments or declines in production during the transition to the new component.

CONCLUSION

Armed with the right market intelligence and commodity subject matter expertise, Strategic Sourcing and Procurement is in an ideal position to bridge traditional gaps between Engineering, Marketing and Sales, and Management teams. The results? Consensus of vision, realistic view of the market, and the strategic planning and execution framework needed to deliver profitable products in a competitive and dynamic market.
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