An overlooked lean technique can identify new paths for continuous improvement.

Most contract manufacturing customers want continuous improvement initiatives that result in cost and quality improvements. Often it is the customer that has to drive these initiatives. We conduct Value Analysis Value Engineering (VAVE) workshops, which are a formalized value enhancing process, to meet these expectations. The focus is defined by a simple equation: Value = (quality + services)/(price + risk). A seven-step VAVE process is used to identify opportunities that add value, minimize cost and reduce risk.

The process starts with project identification and team assignments. A cross-functional team incorporating all required skill sets is critical. Working with the customer, a program is selected for VAVE analysis. EPIC then drives the analysis by evaluating:

- Supplier selection and pricing.
- Pipeline risk and component lifecycles.
- Manufacturing performance.
- Scrap and returned material authorizations (RMAs).
- Test time reductions and enhancement.
- Technology improvements.

Risk mitigation is critical to a lean contract manufacturing process. The VAVE team examines the sourcing for pipeline, market and lifecycle risk. For example, during a past environmental disaster, the team examined the customer's approved vendor list (AVL) and reported there were 285 parts listed on the BOM: 61% were single-sourced; 44 parts had PCNs issued; 23 parts had a high lifecycle risk classification, and 31 parts were sourced with distressed suppliers.

Once the risks are identified, a value analysis attack strategy is developed to improve cost. Sourcing strategies are reviewed and alternate manufacturers are identified. Manufacturing processes and testing strategies are reviewed for poka-yoke and design for manufacturing improvements. Supplier workshops may also be part of this process. Once the potential options are developed, they are then costed out.

In the previous example, the improvement recommendations included expanding the AVL to mitigate the various risks. There were 213 alternate components introduced to reduce sourcing risk, provide supply-chain competitive tension and resolve obsolete part issues. While the recommendations drove cost reductions within the supply base, they also helped mitigate far greater opportunity costs that could have been caused by unmanaged obsolescence or unanticipated supply-chain disruptions caused by vulnerable suppliers.

Recommendations often have more than one option. For example, in one case three options were presented for a cable assembly with an inline fuse:

- Source the current fuse-cable design to a lower-cost supplier.
- Redesign the PCB to incorporate a PTH fuse and fuse holder that would permit a defective fuse to be replaced without replacing the entire cable.
- Change a PTH fuse to an SMT fuse on the PCB.

Each option is costed so that the customer can evaluate cost savings against tradeoffs. In this example, the third option involving an SMT fuse provided greater cost reductions, but reduced flexibility in terms of defective fuse replacements.

Once all the risk and cost analysis is complete, the recommendations are presented to the customer at a feasibility workshop. Form, fit and function reviews are shared. The customer then provides an initial feasibility assessment of the ideas presented and, for those that pass, an evaluation plan is jointly developed.

A tracking spreadsheet known as an Idea Report is used to track the recommendation, approval plan and cost savings. During the implementation phase, an ongoing tracking call is scheduled to review the Idea Report. EPIC collects component samples and specifications for the customer's engineering to review. The team then implements agreed upon process manufacturing changes. The customer completes the feasibility analysis and determines idea acceptance. The customer issues ECNs, and the continuous improvement idea is realized.

The goal of each VAVE project is to develop cost reductions, improve quality, minimize risk, and develop an ongoing basket of improvement opportunities. The process creates an environment where the customer has the data needed to thoroughly evaluate the options and choose the best solutions for the improvements desired. The result typically mitigates obsolescence risks and supply chain vulnerabilities that may have appeared after the program was launched and improves overall productivity, thus reducing cost in multiple areas.

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