Supplier Quality Management Drives Digital Transformation through Visibility, Collaboration, and Automation

By Tom Hennessey

Globally distributed supply chains are a given in the manufacturing of most products, especially for highly engineered products like airplanes, industrial equipment, medical devices and vehicles. Sourcing the best, most cost-effective components from top suppliers all over the globe can be a recipe for success—as long as the suppliers are reliable and the components consistently meet or exceed quality standards. But as products and supply chains become increasingly complex, the inherent risks grow.

Manufacturing is being transformed by digital technology both inside the plant and through smart, connected products that create extended opportunities for customer service and the collection of performance and usage data. Most companies are scrambling to update and integrate their infrastructure in response to emerging competitors and technologies, regulatory pressure, customer expectations and geopolitical disruption.

Highly engineered products (as well as food and beverage, pharmaceuticals and more) rely on suppliers' commitment to producing goods in compliance with the highest standards for materials, precision, safety and durability. Quality failures can be devastating to the primary brand, with repercussions felt throughout the value chain.

The Takata airbag fiasco, where vehicles made by 19 different automakers have been recalled to replace frontal *airbags* on the driver's side or passenger's side, or both in what the National Highway Traffic Safety Administration has called "the largest and most complex safety recall in U.S. history,"stands out as a cautionary tale that has already cost automakers billions of dollars, not to mention killing at least 11 people and injuring hundreds more. And the saga continues: in the United States alone, 42 million

vehicles with defective airbag inflators have been sold, but only a fraction of those have been repaired. As the recalled cars get older, the risk of airbag explosions increases. Of course, quality issues don't have to be anywhere near this big to cause lasting damage to brand reputation, margins, market share and customer loyalty.

Why SQM Makes Sense

Improving supplier relationships with the help of Supplier Quality Management (SQM) processes and technologies helps manufacturers avoid threats and uncover opportunities. Mature SQM is key to supply chain success and can be a competitive differentiator. By implementing industry-proven best SQM practices (including people, process, and technology), manufacturers can sustain high perceived quality, reduce risk, enhance supply chain visibility and collaboration, and streamline tracking and compliance.

In its work compiling benchmark research, data and analysis to improve business performance, <u>LNS Research surveys of manufacturers</u> have found that engaging effectively with the supply chain is a top challenge across industries, and is closely tied to product quality, product realization, and overall success of the enterprise. In acquisition and development (A&D) and automotive industries, collaborating with complex supplier networks is the top concern. Yet only 21 percent of those surveyed had automated SQM processes. This disconnect is highlighted further by the fact that half of respondents indicated SQM is most critical to company success, but 41 percent pointed to SQM as one of their least mature capabilities. In OEMs and complex discrete manufacturers, automating SQM with software is more common than in lower tier suppliers and less complex industries (e.g., paper and packaging).

As manufacturers and suppliers pursue digital transformation, they will find strong use cases for maturing and automating SQM processes. Initiatives addressing continuous quality improvement and monitoring, third party collaboration, information exchange across the value chain, and traceability can be streamlined and integrated into holistic enterprise systems with SQM support. As the digital pillars of smart manufacturing—IoT, cloud, Big Data, mobile and smart devices—coalesce into interoperable platforms, analytics and machine learning will deliver predictive insight into supply chain complexity, trends and performance. Supplier quality issues can be aligned with the strategic objectives of digital initiatives already in motion to prove the value of SQM to stakeholders, feeding a culture of quality.

Companies making infrastructure and Industrial Internet of Things (IIoT) investments to improve supplier performance will get more out of those investments if quality management practices are

mature as well as optimized. LNS Research analysis determined that the mean adoption rate of SQM best practices is 23 percent. These include: mature risk management practices, closed-loop processes and cross-functional teams that span from design to production, performance metrics collection and analysis, SQM automation and strong supplier collaboration. Without these, supplier quality engineers are not properly supported, a problem compounded by the growing talent shortage in supply chain engineering.

LNS found that "industry leaders use automation, cloud-based portals, scorecards and analytics to ensure rich and real-time collaboration with suppliers." Higher levels of SQM maturity correlate to measurable performance improvements and operational excellence. The average operating margin for the S&P 500 is approximately 12 percent. Enterprises with high SQM maturity see significant increases in operating margin (median 32 percent improvement) over those at the lowest maturity levels. Manufacturers with poor visibility into supplier performance are at remarkable competitive disadvantage due to much higher defect rates. Those with highly effective enterprise quality programs, on the other hand, are poised to capitalize on innovative business models, emerging product markets and advances in smart manufacturing technology.

SQM maturity is likewise critical to regulatory compliance. AS9100 Revision D requires that manufacturers oversee the quality of products from their direct suppliers and the tiers of suppliers under them. Companies must be in compliance with Revision D by September 2018. SQM can automate much of the Production Process Verification (PPV) work and analyze inspection results. SQM systematizes the risk-based approach required by Revision D and other regulations, strengthening preventive controls and reducing audits and corrective actions.

This is critical—the cost of mistakes found by customers is five to 10 times greater than the cost of identifying the problem internally at an earlier stage. SQM automation and best practices drive down the overall cost of quality not only by reducing defects, but also by making quality processes and controls across the enterprise more effective and efficient.

Smart manufacturing is no longer an abstract concept. Market leaders are responding to market pressures and opportunities by investing and prioritizing SQM technology to gain deeper control and visibility into increasingly complex value chains. The good news is, strategic implementation of SQM automation and best practices can level the playing field for non-leaders as well. Digital transformation won't wait for slow adopters to catch up. SQM is increasingly required to sustain the status quo—and to grow, innovate and leap ahead.