Product failure is not an option
Analytics insights drive product quality improvements in CPG

Abstract
A CPG company recognized as an innovator in the marketplace was facing serious product quality challenges as mounting warranty claims by consumers drove down revenue. Deloitte delivered a three-pronged solution that applied analytics to gain visibility into manufacturing, production, and product use issues. As a result, the CPG company is on the path to achieving $35 million in cost-of-quality reductions, a strategy for self-funding quality improvements, and improved management of manufacturing and production across its global supply chain.

Challenge — Product failures drive warranty claims

A popular consumer appliance fails to work all-too frequently. Why? The question confounded a fast-growing consumer packaged goods (CPG) company, which discovered that while it was a leader in innovation, it was the worst-performing company in its category in terms of warranty expense as a percentage of revenue. Warranty claims from frustrated consumers were mounting, and quality control leaders feared the problem could escalate further. The continued rise in sales volume necessitated the addition of more contract manufacturers in Asia and component suppliers globally. This growth in production increased the complexity of pinpointing problems in product quality. The root causes of the problem had to be identified and corrected — quickly.

Approach — Reducing cost-of-quality through analytics

Identifying the "3 Vs"

Using sophisticated analytics techniques, Deloitte worked with the company to identify potential causes of product failure and identify options for quality improvement. The team uncovered insights from the company's wealth of big data in the areas of production, warranty returns, customer service, and consumer demographics. The resulting "3V Challenge" represented areas the company could target in order to reduce product failure:

- **Variability** in manufacturing practices and processes among its many contractors and component suppliers led to inconsistent production, product reliability issues, and high-levels of product returns.
- A lack of **visibility** resulted in an inability to effectively monitor its geographically-dispersed supply chain, which was inconsistently adhering to the company's production requirements.
- Poor **velocity** of information exchange, given the lack of data-driven insights, left the company unable to drive corrective action among its many manufacturers in a timely manner.

Applying predictive analytics

Using a three-pronged solution, Deloitte helped the company address the 3V Challenge, tackling the most pressing issues first. Initially, the team focused on applying analytics-driven quality and reliability improvement insights to yield corrective actions intended to significantly reduce warranty claims. These advanced analytics methods considered not only the impact of individual reliability drivers, but also the interaction among multiple drivers — an original approach in the CPG industry. The effort included the development of three predictive models that focused on the root causes of quality issues. These models predicted:

- The likelihood of the product being returned for technical failure — based on such factors as manufacturing day and month
- The drivers of returns coming early (soon after purchase) or late (months after purchase)
- The main consumer demographic drivers of product returns — many based on usage patterns

To provide insight into cost drivers and product margins by product model and retailer, the company deployed Deloitte's Cost of Quality tool. This facilitated product-family-level accounting, the basis for detailed financial analytics focusing on product quality improvement. The team identified a list of hundreds of production system core elements that must be managed by existing and potential manufacturing partners. This list fueled the development of the *Playbook for Global Collaboration*, a detailed manual of processes, roles, responsibilities and tools to further enhance the company's manufacturing strategy.

The third prong of the solution was the creation of a component supplier management system strategy that identified the most strategic components for product quality and performance, and set guidelines for selecting, managing, and evaluating those suppliers.

Results — Critical cost-of-quality savings

There were several innovations that drove tangible results throughout the engagement. The resulting production system approach – in which the contractor can oversee the manufacturing process without owning the detailed product design – is an innovative way for the CPG industry to facilitate quality throughout production. Other significant benefits realized from the three-pronged solution were:

- Identifying a path to achieve and sustain \$15 to \$35 million cost-of-quality reductions — a critical savings for a company in hyper-growth mode.
- Implementing a long-term strategy to self-fund quality and reliability capabilities.
- Executing the use of Production, Quality and Finance organization tools and templates, critical to onboarding three new contract manufacturers in the coming months.
- Ultimately, the company expects these measures will improve and protect its reputation in the marketplace — a critical benefit during ongoing rapid sales growth.

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