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The Lack of Impact of Lean Six Sigma in Textiles, Apparel and Other Basic Industries

When we began researching the impact of Lean Six Sigma in the textile and apparel industries, we set out to identify success factors, understand differences in implementation strategies, and explore how applications varied by business type. We expected implementation to be strongest in segments with demanding customer requirements (for example aerospace, automotive, and medical textiles), moderate in technical operations (spinning, weaving, and dyeing and finishing), and perhaps weakest in apparel and household furnishings segments where style, fashion, and price dominate over quality.

Our findings largely confirmed these expectations, but the reality was more troubling than we anticipated. Textile companies face strong pressure from two very different types of powerful outside forces. On one side, customers in highly regulated industries such as aerospace, automotive, and medical impose their own strict quality standards—including FDA regulations and pharmacopoeia requirements—and textile suppliers must comply with these standards to keep their business. On the other side, large fashion retailers squeeze apparel and household furnishings suppliers by cutting prices and shortening lead times without offering any support for improvement. The automotive industry works well with Lean Six Sigma because production is standardized and suppliers are treated as long-term partners. Textile and apparel manufacturing is the opposite—products change constantly, fast fashion leaves no time for improvement, and suppliers are chosen on price rather than trust or collaboration. Many companies in this sector are small and medium-sized enterprises.

While we did find isolated successes, the overwhelming pattern was one of partial adoption, short-lived efforts, and disappointing returns. We propose a set of revised implementation strategies—ones that account for the unique structural, cultural, financial, and educational realities of this industry—with the potential to deliver far more meaningful and lasting results.

Looking ahead, the integration of artificial intelligence with Lean Six Sigma represents both a significant opportunity and an urgent strategic challenge for the textile industry. AI-powered tools have the potential to accelerate and democratize key LSS capabilities—enabling real-time process monitoring, predictive quality control, automated root cause analysis, and data-driven decision-making at a scale and speed that traditional statistical methods alone cannot achieve. For industries historically hampered by weak data infrastructure and limited analytical capability, this convergence could lower the barrier to meaningful LSS adoption. However, realizing this potential requires deliberate preparation: companies must begin building the digital foundations, data literacy, and cross-functional capability needed to operate in an AI-augmented improvement environment. This is not simply a technology investment—it demands a new generation of improvement professionals who are equally fluent in lean thinking, statistical reasoning, and AI-enabled analytics. The industry that fails to prepare for this evolution risks falling further behind, while those that embrace it strategically may finally unlock the sustained LSS impact that has so far remained out of reach.

Special/ Invited session

Classification

Both methodology and application

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