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Advancing a culture of quality in automotive

Moving from compliance to competitive advantage

In today's automotive manufacturing landscape, the need to advance vehicle quality continues to be of significant importance. High-profile failures and increasing regulatory demands have underscored the far-reaching consequences of neglecting quality—from financial losses and reputational damage to diminished customer trust and safety risks. To thrive, organizations should consider moving beyond viewing quality as a mere compliance exercise and instead embed it as a core value that can drive innovation, operational resilience, and sustainable competitive advantage.

Quality failures are often not just an occasional setback, but can erode brand equity, compress operating margins, and create material balance sheet exposures for original equipment manufacturers (OEMs), their suppliers, and downstream customers including fleet operators.[1] The impact of quality failures can also extend to end consumers as recent study results suggest over half of US vehicle owners (58%) point to product quality as the most important driver of brand choice for their next vehicle.[2]

The shift toward electrification and software-defined vehicles (SDVs) could amplify the financial and operational severity of defects. In certain cases, battery-related defects have required full pack replacements, which can be significantly more expensive than many traditional internal combustion engine repairs. Shared battery platforms across multiple models can further increase recall scope and remediation complexity. Meanwhile, software defects—while sometimes addressable through over-the-air (OTA) updates—still require rigorous validation and regulatory alignment to ensure corrective actions are effective.

Quality risk moving from frequency to severity

Recent recall data illustrates the changing nature of quality risk. The number of vehicle recalls and units affected has surged. Among the top 10 selling vehicle manufacturers in the US, there were 345 recalls and 25.3 million vehicles potentially affected in 2025 (compared to 286 recalls and 24.1 million vehicles in 2024).[3]

Electrical systems, now comprising 20% of recall incidents,[4] have overtaken traditional components like airbags and powertrains, reflecting the industry's technological evolution. This shift reflects the growing integration of electronics, software, and advanced systems across vehicle platforms. Defects in batteries, vehicle electronics, and advanced driver assistance systems (ADAS) can therefore carry broader operational and financial consequences, particularly when they affect high-volume models or shared architectures.

Left unchecked, a long-term lack of focus on quality or "quality debt" (i.e., an accumulation of unresolved product, process, or governance deficiencies) within an organization can compound over time as defects surface externally across customer, dealer, and regulatory channels. Repeated recalls or corrective actions can heighten stakeholder scrutiny and increase the financial and operational burden required to restore confidence. When remediation efforts are reactive or narrowly scoped, they may address individual defects without resolving underlying systemic issues, allowing risk to persist across future product cycles.

Ultimately, reducing warranty exposure may require companies to prioritize defect detection and prevention before vehicle launch rather than relying solely on post-sale remediation. Late-stage fixes—particularly for high-severity defects—can carry materially higher financial, operational, and reputational costs than issues identified and resolved earlier in the development life cycle.

Leadership sits at the core of quality culture

Advancing vehicle quality begins with leadership. Senior executives play a critical role in championing quality as a strategic priority, ensuring that sufficient resources, governance structures, and decision rights are in place to delay product launches or halt shipments when validation thresholds are not met. Early concerns should be recognized and managed as enterprise financial and operational risks requiring timely remediation, rather than isolated technical issues.

Quality responsibilities should be clearly defined and owned, avoiding diffusion of accountability. Leadership incentives and internal audits should be tied to quality outcomes, shifting focus from launch speed and short-term financial results to defect prevention and long-term value creation. It should also be noted that quality is not the sole domain of engineering or compliance teams; it requires cross-functional collaboration across IT, safety, manufacturing, procurement, supplier management, and others.

The use of digital twins and predictive AI can enable proactive issue detection and continuous improvement,[5] but their effectiveness often depends on organizational governance and rapid response. OTA updates, for example, can reduce recall costs by over 95% for software issues,[6] but only if supported by disciplined release processes, rigorous validation, and integrated recall classification.

Spreading a focus on quality across the ecosystem

As OEMs shift more recall and warranty costs to suppliers through aggressive contract indemnification clauses, supplier selection criteria can increasingly prioritize past warranty performance. Suppliers with histories of recalls or quality issues may be penalized, often losing future business opportunities despite competitive pricing. Contracts can also include penalties for supply chain disruptions, such as fines for shutting down an OEM's manufacturing line.

Suppliers, in turn, must prioritize logistics, inventory buffers, and quality controls to avoid costly claims. Extending a culture of quality to external partners through audits, feedback, and collaborative improvement is essential for managing supply chain risk and ensuring end-to-end accountability.[7]

Recall management and 'fix velocity'

Recall execution serves as a practical test of an organization's quality culture. Metrics such as recall completion rates, remedy deployment timing, dealer readiness, and parts availability provide insight into whether governance mechanisms operate cohesively across engineering, supply chain, and dealer networks. When recall remedies are delayed or incomplete, quality-related exposures can persist beyond the initial defect identification. Effective recall management therefore can benefit from coordinated execution and transparent performance monitoring across the enterprise.

Organizations with mature recall governance prioritize "fix velocity"—the speed and consistency with which validated corrective actions are deployed across the affected vehicle population. Achieving high fix velocity often requires coordinated parts logistics, dealer network capacity, integrated information systems, and real-time performance visibility to ensure remedies are executed efficiently and at scale.

Achieving early wins and building momentum

Early visible improvements can help reinforce accountability and build momentum around quality and safety priorities. Recognizing contributions across functions, providing role-based training grounded in real-world scenarios, and establishing clear reporting channels and aligned incentives can strengthen organizational ownership and support continuous improvement.

Embedding quality checks at every stage of operations, using standardized tools, processes, and dashboards, helps to ensure that issues are managed proactively with a high degree of transparency. Quick wins also demonstrate the value of quality, encouraging broader enterprise engagement.

Recommendations to consider

To establish a culture of quality, executives can consider the following imperatives:

- **Strengthen executive sponsorship and resource alignment.** Ensure quality objectives are supported by clear leadership accountability, appropriate funding, and data-driven performance monitoring across the organization.
- **Align incentives and capability development with quality outcomes.** Implement role-based training and incentive structures that reinforce defect prevention, transparent reporting, and long-term value creation.
- **Modernize technology and data infrastructure.** Enhance digital tools, analytics capabilities, and standardized processes to improve early issue detection and life cycle quality visibility.
- **Establish integrated quality analytics capabilities.** Develop cross-functional teams that consolidate field data, warranty insights, supplier performance metrics, and recall trends to support proactive decision-making.
- **Extend quality governance across the ecosystem.** Reinforce expectations with suppliers and external partners through structured oversight, performance feedback, and collaborative improvement initiatives.

In today's automotive industry, quality is not just a compliance task. It is a strategic requirement and can be a source of competitive advantage. High-profile failures and stricter regulations have shown that neglecting quality can lead to serious financial, reputational, and safety consequences. As a result, companies should consider shifting from viewing quality as a cost or compliance task to embedding it as a core value throughout the organization.

Success requires leadership to prioritize quality across strategy, operations, design, manufacturing, supplier management, and customer experience. Although cross-functional integration is beneficial, responsibilities should be clearly defined and owned, avoiding diffusion of accountability. Compliance should be seen as an opportunity for improvement, unlocking transformative performance outcomes.

Ultimately, sustainable improvement comes from treating quality as an enterprise-wide financial risk, balancing defect prevention against operational speed, enforcing disciplined release processes, and designing recall execution as an integrated system. Preventing defects is far less costly than repeatedly fixing them after public failures. By advancing vehicle quality, automotive companies can protect consumer safety and preserve brand reputation while maintaining regulatory compliance—helping to ensure long-term success in a rapidly evolving industry.

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Endnotes

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