

KB



BEYOND ORDINARY PLM:

HOW AUTOMOTIVE MANUFACTURERS CAN REDUCE DEFECTS & INCREASE EFFICIENCY WITH A QUALITY-FIRST PLM STRATEGY

February 2023

Sarah Gaffney
Manager
Research Data & Operations

Every day, automotive manufacturers face various external pressures such as the rapid advancements in electric vehicle, autonomous vehicle, and connectivity technologies. They must also comply with safety and carbon emissions regulations and deal with intense competition in the industry. Product Lifecycle Management (PLM) provides a roadmap to navigate these market changes and ensure manufacturers efficiently and cost-effectively deliver high-quality, reliable products to their customers.



Why Automotive Manufacturers are Turning to PLM

The automotive industry faces the task of maintaining quality amidst a tidal wave of challenges. Ongoing supply chain issues, changing environmental and safety regulations, and increasing customer demand for product and service innovation are shaping priorities for automotive leaders, and defects can be overlooked in the chaos these challenges bring. Aberdeen's research shows that, on average, only 56% of products generated by automotive manufacturers are shipped with zero defects. Defects in essential parts like airbags and brakes would require an immediate recall, resulting in an increase in operating costs to manage the recall on top of the sunk costs from the defective parts. Other defects may go unnoticed and cause problems later in the product lifecycle, such as peeling paint or failing oil pumps. These delayed quality issues can decrease customer satisfaction as well as increase costs for warranties and repairs. Establishing a quality-first strategy ensures the value of products and services is not impacted by changing business conditions, and it saves the organization time and money further down the line.

As product complexity continues to rise and the automotive landscape continues to evolve, automotive manufacturers need end-to-end visibility into material and product data to detect and handle defects efficiently to keep their customers happy and their revenue healthy. Product Lifecycle Management (PLM) solutions are built to enable visibility into all stages of product development and deployment and provide business leaders with insights for smarter decision making to prepare for disruptions.

Aberdeen's latest research with 200 PLM decision-makers investigates how top performing organizations leverage PLM technology to support quality management processes. Of the respondents, 30% work at automotive manufacturing organizations, and their answers reveal that the top five

Only
56%
of products generated
by automotive
manufacturers are
shipped with zero
defects

market pressures affecting quality management strategies in the automotive industry are:

1. Ensure customer satisfaction
2. Need to reduce the risk of non-quality (warranties, recalls, etc.)
3. Demand for competitive differentiation with higher quality
4. Need to comply with regulatory requirements
5. Demand for more reliable products

Ensuring customer satisfaction is the number one pressure across all industries, but the need to reduce the risk of non-quality is uniquely important for automotive manufacturers. In fact, 32% of automotive manufacturers ranked it as one of their top three pressures compared to only 16% of other manufacturers, showing that reducing the risk of non-quality is two times as important to the automotive industry as other industries. Insight into quality data throughout the product lifecycle can help business leaders see how quality issues are affecting their bottom line and how to avoid them in the future.

Demand for competitive differentiation with higher quality is another top pressure, indicating that the competitive environment of the automotive industry requires manufacturers to improve their quality to maintain their customer base. They also need to provide innovative product and service offerings to keep their customers engaged, especially as new technology around electric vehicles and self-driving cars continues to flood headlines. Closed-loop quality processes enabled through PLM help manufacturers identify areas for improvement by bringing together product performance and customer feedback from the field and sending these insights to engineering teams.

Compliance with regulatory requirements around safety and carbon emissions has always been top-of-mind for the automotive industry, and demand for more reliable products highlights the need for manufacturers to prioritize quality to lengthen the lifespan of their products. With visibility into product data in the field through PLM, manufacturers can monitor product performance and even schedule predictive maintenance when needed to increase the reliability of their products.

Business Impact of PLM for the Automotive Industry

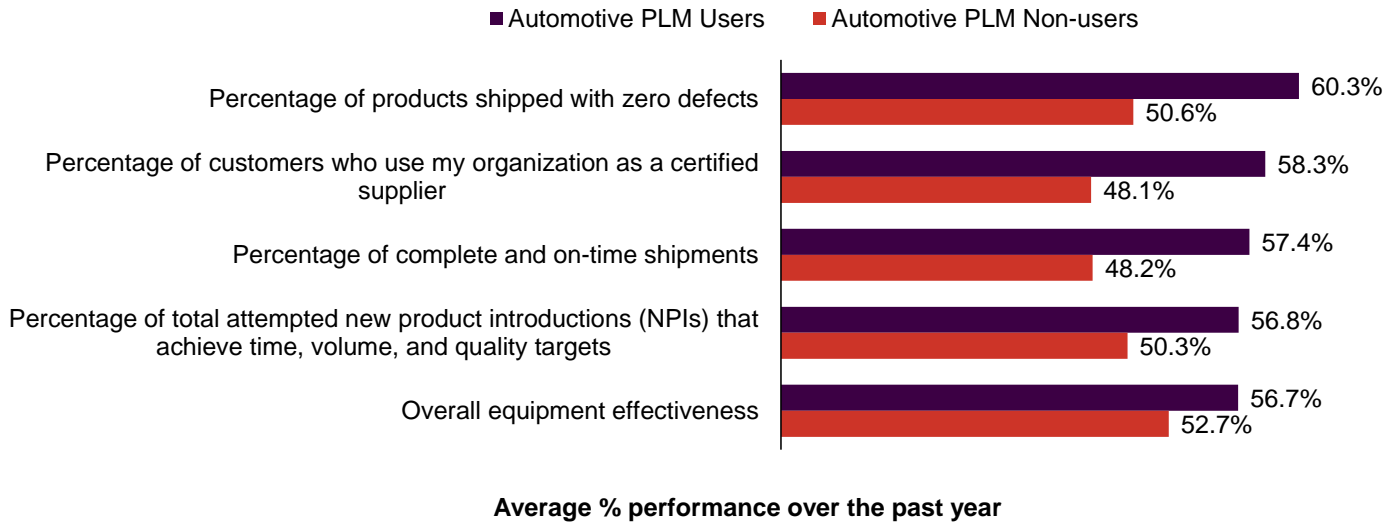
There are many opportunities and use cases for PLM to make a difference for automotive manufacturers, but Aberdeen's research showcases the tangible impact PLM solutions can have on critical quality, financial, and business metrics. When compared to the automotive manufacturers who are not leveraging PLM, it's clear that the 52% of automotive manufacturers in

Out of all industries surveyed, automotive manufacturers are the most likely to be concerned about **reducing the risk of non-quality.**

52%
of automotive manufacturers are **currently using PLM solutions.**

Aberdeen's study that currently use PLM solutions (PLM users in the chart below) are more likely to have fewer defects, greater efficiency, and healthier customer relationships (Figure 2).

Figure 2. Operational and Innovation Advantages for PLM Users



n = 200, Source: Aberdeen, February 2023

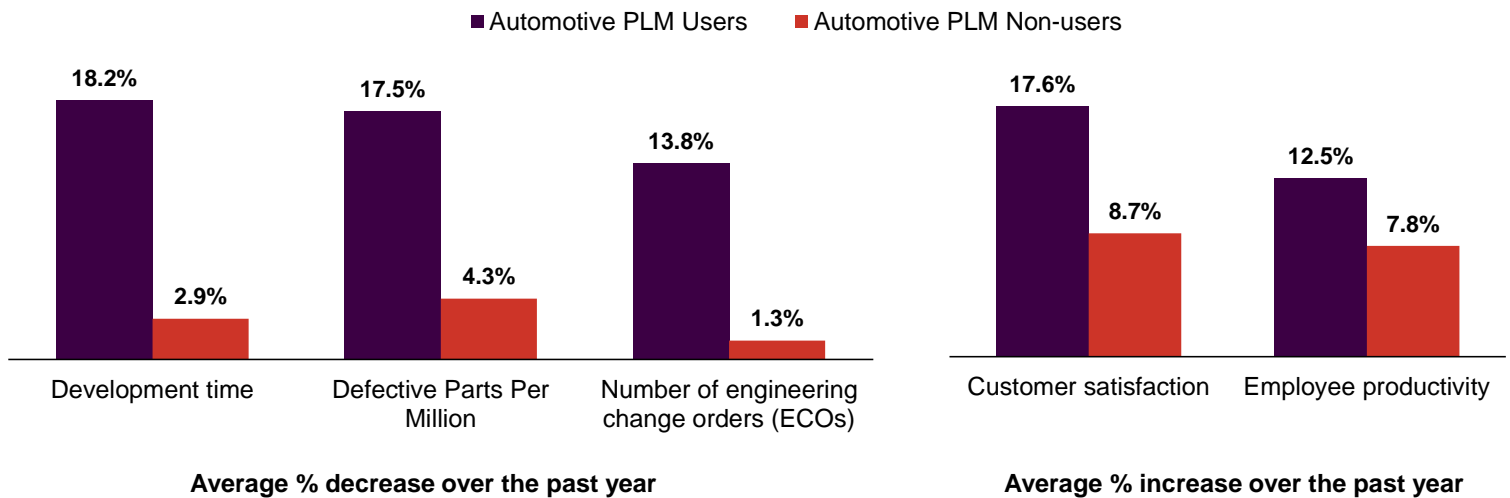
On average, 60% of products generated by automotive PLM users are shipped with zero defects, compared to only 51% of non-users. This implies that PLM can help manufacturers reduce their likelihood of defects by 19% (percent difference between 60.3% vs. 50.6%), and this impact compounds if we consider cars shipping with multiple defects. Similarly, PLM can contribute to an improvement in the percentage of customers who use their organization as a certified supplier. Customer trust is essential for businesses to maintain and even expand their customer base, and consistently generating high-quality products can lead to partnerships with valued customers.

PLM also helps improve productivity by helping decision-makers quickly and effectively address roadblocks during design or production to get products out the door on time. PLM users fulfill 19% more complete and on-time shipments (57.4% vs. 48.2%) and their OEE is 8% greater (56.7% vs. 52.7%) than non-users. They also generate 13% more NPIs that achieve time, volume, and quality targets than non-users (56.8% vs. 50.3%). They are tuned in to what their customers want, and they have the standardized quality processes in place to execute on NPIs and get them into market before their competitors.

PLM not only improves operational performance today, but it sets automotive organizations up for a successful future. PLM helps improve performance

year-over-year to continue reducing costs and setting standards of excellence for their customers (Figure 3).

Figure 3. PLM Users Experience Greater Improvements in Efficiency, Quality, and Customer Satisfaction



n = 200, Source: Aberdeen, February 2023

PLM users experience 5.3 times greater annual decreases in development time compared to non-users (18.2% vs. 2.9%). With a system that feeds quality data back to engineering teams, design leaders have more information about customer needs and product performance to base their decisions on and keep the development process moving forward. PLM users also experience 3.1 times greater annual decreases in defective parts per million than non-users (17.5% vs. 4.3%). Reducing defects is essential for automotive manufacturers to improve product reliability and increase customer loyalty while decreasing operating costs and the risk of non-quality.

PLM usage is also associated with greater reductions in the frequency of engineering change orders. Enabling internal collaboration across all stages of product development and deployment on top of enhancing performance insights, PLM improves the likelihood of getting designs right before sending them into production. This workflow also helps to improve employee productivity by minimizing the back and forth between design and manufacturing teams.

All these benefits culminate into the value automotive manufacturers can bring to their customers when they use PLM. PLM users are seeing 17.6% year-over-year improvements in customer satisfaction on average compared to only 8.7% for non-users. Reliability, quality, and innovation are critical for customers buying automotive products, and ensuring customer satisfaction is

PLM users experience
3.1x
 greater year-over-year
 decreases in defective
 parts per million
 compared to non-users.

top of mind for all manufacturers. PLM can help them achieve their goals and exceed customer expectations.

Summary & Key Takeaways

PLM is the beating heart of any manufacturing organization, and a quality-first PLM strategy can help them stay ahead of customer needs, rising operational costs, potential disruptions, and the pace of innovation. For the 48% of automotive manufacturers who have yet to integrate PLM into their tech stack, the use cases, benefits, and performance gains outlined in this report present the case to invest (see sidebar). For the 52% who have already implemented PLM, the journey to quality excellence doesn't stop there. These organizations have the opportunity to leverage their PLM solutions to gain insight into product performance and customer feedback and take action based on those insights to impact all stages of the product lifecycle.

About Aberdeen Strategy & Research

Aberdeen Strategy & Research, a division of Spiceworks Ziff Davis, with over three decades of experience in independent, credible market research, helps **illuminate** market realities and inform business strategies. Our fact-based, unbiased, and outcome-centric research approach provides insights on technology, customer management, and business operations, to **inspire** critical thinking and **ignite** data-driven business actions.

This document is the result of primary research performed by Aberdeen and represents the best analysis available at the time of publication. Unless otherwise noted, the entire contents of this publication are copyrighted by Aberdeen and may not be reproduced, distributed, archived, or transmitted in any form or by any means without prior written consent by Aberdeen.

18585

Key Benefits of PLM for Automotive Manufacturers:

- ▶ **Reduce defects** – PLM users experience a higher percentage of products shipped with zero defects and greater YoY improvements in Defective PPM.
 - ▶ **Improve process efficiency** – PLM users have a higher percentage of complete and on-time shipments and OEE, and they experience greater YoY improvements in development time, ECOs, and employee productivity.
 - ▶ **Boost customer satisfaction** – PLM users have more customers that use them as a certified supplier and experience greater YoY improvements in customer satisfaction ratings.
-