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BEYOND ORDINARY PLM:

HOW HIGH-TECH & ELECTRONICS MANUFACTURERS CAN ENABLE INNOVATION WITH A QUALITY-FIRST PLM STRATEGY

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Innovation is the name of the game for electronics and high-tech manufacturers, but the need to maintain quality amidst the increasing pace of innovation is one of the top challenges for these competitive businesses. They also must consider the ever-changing needs of their customers and growing expectations for complexity. Product Lifecycle Management (PLM) provides a roadmap to navigate these market challenges and ensure manufacturers deliver high-quality products while still hitting their time-to-market and cost goals.

Why High-Tech Manufacturers are Turning to PLM

The landscape of the high-tech industry evolves on daily basis, and manufacturing organizations need to keep their finger on the pulse of their supply chain, operations, and buyer expectations to keep up. Ongoing supply chain issues, pressure from competitors, and increasing customer demand for product and service innovation are shaping priorities for high-tech leaders, and product quality can be overlooked in the chaos these challenges bring.

Aberdeen's research shows that, on average, only 53% of new product introductions (NPIs) achieve time, volume, and quality targets. This means that barely half of the products high-tech manufacturers bring to market are released on time to remain competitive, available in enough volume to support anticipated demand, and high enough quality to meet customer expectations. Without visibility into product and quality data throughout the product lifecycle, high-tech organizations are at risk of falling behind the pace of innovation and incurring avoidable operating costs. Establishing a quality-first strategy ensures product performance and quality is monitored every step of the way, even into the field where performance data can be relayed back to engineering teams for a cycle of continuous improvement.

Only

53%

of NPIs generated by high-tech manufacturers achieve time, volume, and quality targets.

As product complexity continues to rise and innovation in the high-tech sector accelerates, high-tech manufacturers need end-to-end visibility into material and product data to detect and handle defects efficiently to reduce their operating costs and meet customer expectations. 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 stay ahead of the competition.

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, 37% work at electronics and

high-tech manufacturing organizations, and their answers reveal that the top five market pressures affecting quality management strategies in this industry are:

1. Manage risk in operations
2. Ensure customer satisfaction
3. Demand for competitive differentiation with higher quality
4. Need to ensure quality amidst the increasing pace of innovation
5. Need to reduce costs while maintaining quality standards

Managing risk in operations and ensuring customer satisfaction are the top two pressures across almost all industries, but the need to ensure quality amidst the increasing pace of innovation is uniquely important for high-tech manufacturers. In fact, 30% of high-tech manufacturers ranked it as one of their top three pressures. A barrier that is likely contributing to this need to ensure quality is the lack of visibility high-tech manufacturers have into quality data throughout the product lifecycle. 27% of high-tech manufacturers rated this as one of their top operational challenges compared to only 21% of others. Insights from PLM can help business leaders identify quality issues both inside and outside the factory, so they can handle defects before they reach customers and plan for new update, product, and service opportunities accordingly.

Out of all industries surveyed, high-tech manufacturers are the most likely to be challenged by **lack of visibility into quality throughout the product lifecycle**.

Demand for competitive differentiation with higher quality is another top pressure, indicating that the competitive environment of the high-tech 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 AI/machine learning, virtual and augmented reality (VR/AR), and 5G continue 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.

Even amidst the race to get high-quality, innovative products to market, high-tech manufactures are concerned about costs. Surges in inflation, raw material prices, and energy costs are forcing organizations to prioritize every penny. A quality-first strategy enabled through PLM can help cut costs by reducing resources spent on cleaning up defective product batches and by reducing the cost of non-quality further down the line for recalls and warranty claims.

Business Impact of PLM for the High-Tech Industry

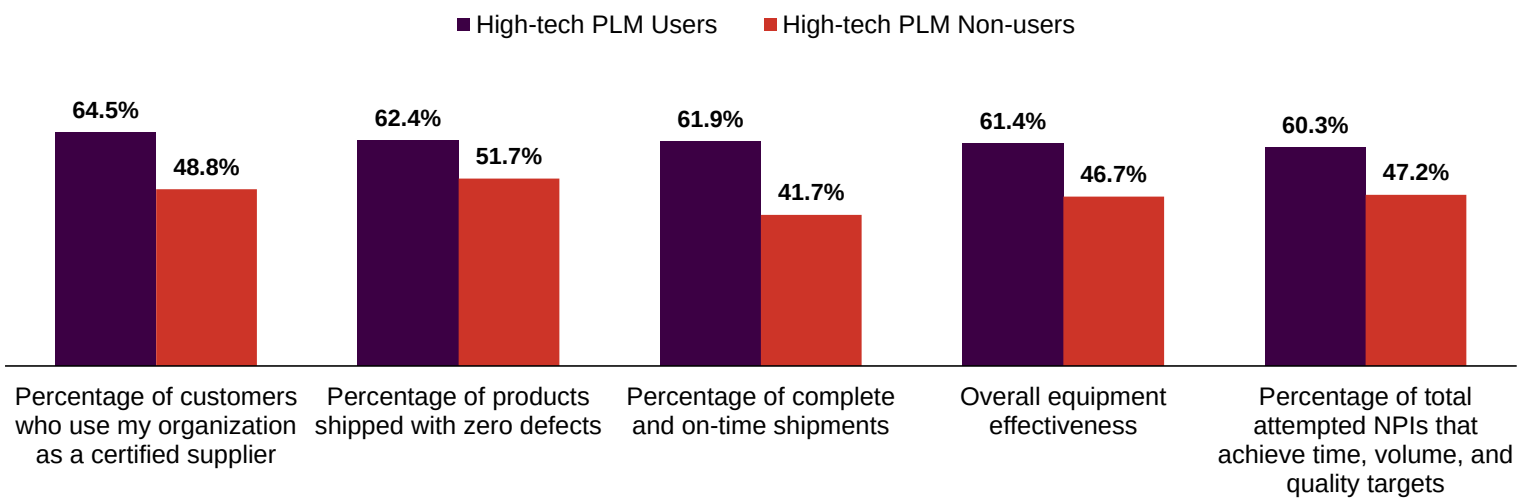
There are many opportunities and use cases for PLM to make a difference for high-tech manufacturers, but Aberdeen's research showcases the tangible

impact PLM solutions can have on critical quality, financial, and business metrics. When compared to the high-tech manufacturers who are not leveraging PLM, it's clear that the 45% of electronics and high-tech manufacturers in 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).

45%

of electronics & high-tech manufacturers are **currently using PLM solutions**.

Figure 2. Operational and Innovation Advantages for PLM Users



n = 200, Source: Aberdeen, March 2023

On average, 60% of NPIs generated by high-tech PLM users achieve their time, volume, and quality targets, compared to only 47% of non-users. This implies that PLM can help manufacturers improve their likelihood of an NPI meeting its goals by 28% (percent difference between 60.3% vs. 47.2%). 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. Looking at year-over-year (YoY) improvements in time-to-market for PLM users versus non-users (see sidebar), it's clear that PLM solutions keep teams connected and provide a digital thread throughout the entire lifecycle from development to manufacturing to service.

Additionally, 62% of products generated by high-tech PLM users are shipped with zero defects, compared to only 52% for non-users, showing that PLM can reduce the likelihood of defects by 21% (62.4% vs. 51.7%). This impact compounds if we consider smartphones or smart home devices with multiple defects. PLM can also 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,

Impact of PLM on Time-to-Market

YoY decrease in **development time:**

- PLM Users: **15.2%**
- Non-users: **8.8%**

YoY decrease in **manufacturing cycle time:**

- PLM Users: **30.0%**
- Non-users: **8.9%**

YoY decrease in **service time:**

- PLM Users: **20.4%**
- Non-users: **7.6%**

Average % decrease year-over-year for high-tech manufacturers

and consistently generating high-quality products can lead to partnerships with valued customers.

PLM can even 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 48% more complete and on-time shipments (61.9% vs. 41.7%) and their OEE is 31% greater (61.4% vs. 46.7%) than non-users.

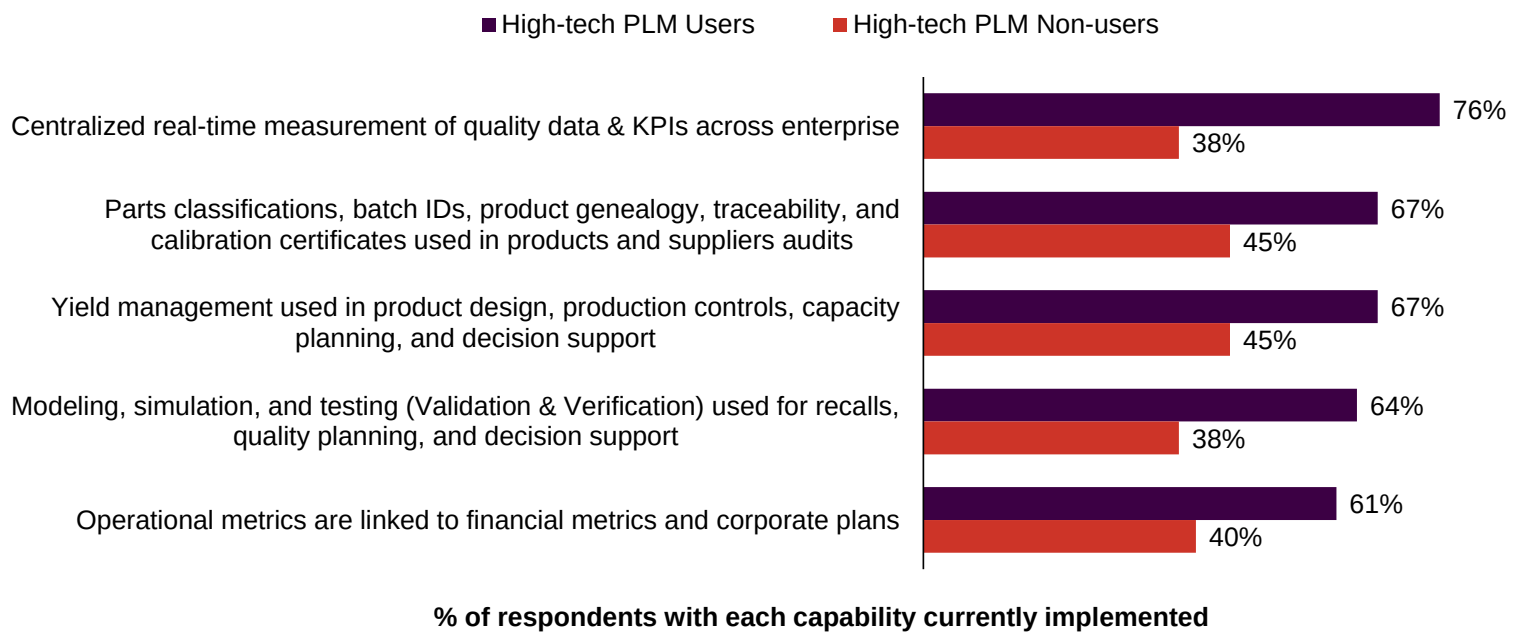
Improvements in time-to-market, productivity, and efficiency contribute to greater reductions in operating costs and increases in profitability (see sidebar). The capabilities for visibility and control offered through PLM enable high-tech manufacturers to generate more products faster and at lower costs. Figure 3 showcases several key capabilities PLM users have to boost their performance over their competitors.

PLM users experience

32%

greater year-over-year **increases in profitability** compared to non-users.

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



n = 200, Source: Aberdeen, March 2023

PLM users experience faster decision-making through centralized, real-time management of quality KPIs and a connection between operational metrics and financial metrics. A centralized database reduces time spent searching for information and reconciling entries from different sources, leaving more time for strategic thinking and actions. Visibility into quality and financial data at the executive level helps business leaders see how quality issues are affecting their bottom line and how to avoid them in the future.

Yield management contributes to reductions in operating costs and promotes Lean manufacturing. PLM connects the dots between design and production to accurately measure raw material utilization. With greater control over how raw materials are being used, high-tech leaders can reduce waste and create efficient production schedules, leading to greater decreases in operating costs.

Another area of performance to consider is risk management. The need to manage risk in operations is the number one pressure affecting high-tech companies, and capabilities such as traceability for audits and modelling for recalls strengthen risk management strategies. PLM enables these capabilities by bringing together all product data on one platform to effectively conduct these processes. Less time spent compiling data for audits and recalls allows high-tech manufacturers to focus on new opportunities without the hesitation that new business models will open doors for new risks.

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 56% of high-tech 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 45% 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.

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Key Benefits of PLM for Electronics & High-Tech Manufacturers:

- **Improve decision-making** – PLM users experience a greater NPI performance and better data management capabilities to support data-driven decisions.
- **Increase process efficiency & time-to-market** – PLM users have a higher percentage of complete and on-time shipments and OEE, and they experience greater YoY improvements in development, manufacturing, and service time.
- **Mitigate operational risk** – PLM users are more likely to utilize traceability for audits and modelling for recalls to effectively plan to address operational risks.