

# Minimizing Supply Chain Disruptions: Leveraging PLM to Reduce Risk

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In a 2010 study,<sup>1</sup> *CFO Magazine* reported that among senior finance executives, supply chain risk ranked second after the risk of financial exposure. The risk of supply chain disruptions was closely followed by legal liability/reputational harm and technology failure — possibly indicating a close relationship between those three risk factors. The study also suggests “many companies would benefit from a more forward-looking approach to managing risk.” Today, many apparel companies have within their reach a viable solution to help minimize supply chain risk: Product Lifecycle Management (PLM) systems.

For years, apparel companies have been implementing PLM software solutions to develop material libraries and promote product development collaboration among their designers and buyers. These solutions typically replace inefficient legacy systems and a myriad of disparate spreadsheets, while greatly improving process execution. As a result of improvements in product design and development collaboration, creation of accurate tech packs is faster and the overall development timeframe is indeed shortened. Furthermore, some companies collaborate with their supply base by using their PLM solution to initiate and track sample requests and request cost quotations.

However, after attaining approvals for necessary pre-production samples and securing a profitable cost, product adoption is typically the final process executed in PLM systems — despite the expectation implied in the solution name: product “lifecycle” management. Parker Avery asserts that companies who have implemented PLM should not stop at product adoption. Existing investments in PLM can be leveraged even deeper into the product development process and throughout the entire supply chain to minimize risk and disruptions.



While implementing a PLM solution may help shorten the development cycle, there are many factors that can occur during and after product development that may disrupt the on-time delivery of a product to its end destination. To improve visibility and prevent these disruptions, companies should leverage the information within a PLM solution and use it in downstream supply chain systems. In fact, a number of PLM software vendors already include some supply chain capabilities in their solutions.

Functional capabilities that lend themselves well to extending information that exists in PLM solutions include:

- Production and logistics tracking
- Social and environmental compliance
- Product quality

The information gathered in these downstream areas can be used further to develop supplier scorecards, enabling better understanding of supplier performance and assisting with future source of supply decisions.

## Tracking products through a Supply Chain Control Tower

Typically, companies implement PLM systems to develop products in the quickest and most efficient manner. An extension of PLM is to feed the product information to the production tracking and purchase order management systems to assist in managing the post-adoption processes. Unfortunately, many times this is still performed in multiple disparate systems or via spreadsheets, where it may be difficult for users to identify which orders/products need their immediate attention.

As a result of the inability to foresee and react quickly to exception events, product delays can occur, impacting margins and sales. ▶

<sup>1</sup> <http://ww2.cfo.com/risk-compliance/2010/07/learning-too-much-from-history/>

# VENDOR VIEWPOINT

Ken Fearnley, Chief Technology Officer, Simparel



**Apparel: PLM continues to evolve as a strategic rather than tactical tool at many an apparel enterprise. What specifically does it mean to give PLM a more central role in end-to-end supply chains and what benefits accrue to those that do?**

**KEN FEARNLEY:** PLM streamlines processes and fosters innovation across the enterprise. Apparel businesses are using PLM to track product workflow, in real time, from concept to consumer. This is a big change when you think about how the industry previously utilized this technology. Traditionally, PLM had been relegated to product data management, with a lot of emphasis on bills of materials and tech packs. For many, use of PLM's tactical tools stopped when they entered the production stage. Now PLM software is leveraged for seamless movement from product development through production. Its footprint has expanded to include not only line/merchandise planning, collaborative design, sampling and costing but also sourcing, supply chain management and execution. We're seeing PLM integrated into both merchandising and e-commerce activities as companies race to position their products online. Also, PLM's role in process tracking, control and quality assurance has taken on heightened importance as apparel brands focus greater awareness on regulatory and social compliance. There is a single source of product-related data.

This end-to-end use of PLM enables organizations to truly integrate people, processes, data and systems. Benefits include greater process visibility and control, faster new product development, higher quality, reduced product costs, shorter lead times, improved inventory management, better order accuracy, optimal materials usage across lines, enhanced collaboration and product innovation.

**Apparel: From your experience with clients, what areas of improvement would you say apparel businesses are most surprised to find they can achieve via expanded use of their PLM platform, and what sort of ROI are they seeing in terms of dollars, time, efficiencies, etc.?**

**FEARNLEY:** Our customers achieve ROI from PLM that can be measured from both a strategic perspective and specific quantifiable terms. Strategically, they attain a tangible competitive advantage from working faster and reducing time to market. This capability has a direct correlation to improved customer service and relationships. They develop a reputation for being flexible and able to make changes later in the development timeline. Their designs and products do a better job of meeting consumer needs because decisions are made closer to market.

All of these advantages can be quantified. We encourage and help our clients to establish benchmarks from which to measure improvements. For example, there often are significant reductions in materials costs due to more effective PLM-based cost management. Customers can more easily track materials usage based on commitments. Materials costs are also reduced through better utilization and allocation across product lines. Efficiencies

are gained through fewer sample iterations, errors and rework. With integrated PLM, apparel businesses also can track increased sell-through of merchandise at higher margins. At the same time, they can measure inventory reductions.

Customers often are surprised to discover just how much PLM improves efficiency. This ROI can be measured in many different ways. For example, the same number of employees may be managing more vendor RFQs because they can quickly and easily compile and compare quotes side by side. They also can more efficiently develop and manage a greater variety of products, which is critical to meet consumer demand for more product choices. Similarly, early on in the cycle, PLM software can highlight issues that might influence a decision to drop a new product. For instance, is the style showing less promise than expected? Does it exceed the target price point? Integrated PLM also eliminates the need for design, product development and sourcing teams to maintain stand-alone spreadsheets, which often contain redundant information. Instead, they can enter and update data collaboratively so that everyone is on the same page. These are just a few instances of how PLM enables standardization of business processes and better integration of functional departments.

**APPAREL: How do you expect product design and development processes to change in the coming one to two years, and which technologies will have the greatest impact?**

**FEARNLEY:** There promises to be greater integration of PLM with next-generation 2D/3D CAD and 3D printing technology, which will expand the role of PLM in the design stage. With advanced PLM collaboration tools, designers and suppliers can share and mark up a real-time view of design assets and utilize 3D printing to accelerate time to market.

In the next 12 to 24 months, we will also see more integration between product development and sourcing activities. Omnichannel commerce continues to put pressure on apparel brands and retailers to transform their supply chain execution. For example, there will be more shared visibility into sourcing and inventory management as wholesalers and retailers work together to seamlessly fulfill omnichannel orders.

For each business, the progression of these process changes will be unique. It's important to evaluate priorities in the PLM discovery stage and ensure the most important strategic objectives are addressed in the first phase of implementation.

Next-generation PLM platforms offer business intelligence (BI) tools capable of capturing stage-gate data. This enables measurement and continuous improvement of new product development. Speed and cost advantages will increase as cloud computing, BI tools and wearables, including holographic and haptic technologies, are able to be integrated into the PLM solution.

*Vendor Viewpoint is a regular Apparel advertorial feature.*

A new twist on a proven concept has emerged over the past few years: the Supply Chain Control Tower. The basic concept of the Supply Chain Control Tower is to receive and manage data from different systems and enable users to identify and manage supply chain disruptions before and as they arise. While “manage by exception” has been around for a while, the concept of the Supply Chain Control Tower is to bring all information into a central hub for better visibility. Similar to an air traffic control tower that manages aircraft on the ground and through controlled airspace, the Supply Chain Control Tower manages all of the information regarding the production and delivery of a product.

As an example, let’s consider a retailer who develops a new blouse. At adoption, the new product information is sent from the PLM system to the Control Tower. A sticking point for some companies is confidence that the raw materials have been purchased from the mill and are on schedule to arrive at the factory on time. A Control Tower could signal whether the “Raw Material Purchase” event has happened within a pre-defined, required number of days after the “PO Create Date.” The Control Tower could continue to monitor the blouse’s subsequent production tracking events (e.g., Raw Materials Received, Sewing Complete) and notify the appropriate user of any exceptions.

By leveraging the information in a PLM solution to feed a Supply Chain Control Tower, there is one version of the truth where the same product information is managed from the pre-development process through DC/store receipt, including production and transit milestones. This full cycle visibility allows a company to minimize the risk of not meeting demand by addressing and resolving supply chain disruptions sooner and more effectively.

### Managing social compliance issues

PLM can also help a company with verifying and managing social compliance audits with its suppliers. The social compliance standard, known as SA8000<sup>®</sup>, was created in 1998 and is based on the United Nations’ Declaration of Human Rights and national law that created a common language to measure and validate a supplier’s social compliance.<sup>2</sup> SA8000<sup>®</sup> identifies nine elements of a workplace (e.g., child labor) to ensure that the basic human rights of workers are protected. Auditors assess a factory on each of these factors and develop a rating. Typically, these audits are performed on a yearly basis, but in reality, it is a non-stop evaluation process.

At any time, there may be an event that could force a company to update its compliance rating for a factory. This rating and the audit date should be entered into or sent to a PLM solution, allowing the sourcing and production teams to identify their compliant suppliers and those that need additional effort to become compliant. Additionally, by recording the audit date, it will inform overseas teams when a supplier and/or factory should be recertified. This will minimize the risk that a product will be developed with a non-compliant supplier/factory.

<sup>2</sup> <http://www.sa-intl.org/index.cfm?fuseaction=Page.ViewPage&PageID=937>

While supplier audits and social compliance verification typically occur prior to product development with a supplier, there are instances where a supplier may fail these audits or re-audits after the product has already been developed. Using PLM data to identify which suppliers have been verified as compliant, downstream systems will have immediate visibility to any non-compliant suppliers that may have current transactions in their system.

An additional benefit of allowing the development team to have visibility to certified suppliers is to improve product quality. Suppliers that have passed the social compliance standard are more likely than those that have not passed to have a positive and safe work environment. When workers are treated properly, the workforce is happier and more stable, thereby reducing employee turnover. A more tenured workforce is traditionally better trained and produces a higher quality product than newer workers who may be less experienced and have less training.

### Managing product quality

A further boost to managing product quality comes as a natural extension of PLM because it is product-specific. Most Quality Assurance (QA) teams have created extensive test protocols to verify a supplier’s product quality and/or performance. Depending on the nature and number of products a retailer offers, there can be hundreds of protocols to manage.

After the product has been created, a PLM solution can be leveraged to identify the proper protocol and the responsible testing service. The ideal process is to have the protocol systematically attached to the product in the PLM solution based on a set of predefined criteria (e.g., product category, class, subclass). While this may be more difficult than it sounds, at a minimum, a PLM solution should store the testing protocol number and/or documents.

As the product continues toward adoption, the product information and required protocols are sent to the QA team and/or third-party testing service. This gives the QA teams the proper amount of time to plan their work and reduces the risk that a purchase order will be delayed due to lack of testing. Additionally, when a quality issue has been identified, it is early enough in the process to give the supplier enough time to resolve the issue and minimize the risk of a delayed order.

Once the testing has been completed, the results should be sent to the PLM solution. By storing all product-related information in one system, a company is able to identify quality key performance indicators (KPIs) to measure the performance of the supplier and identify any out of tolerance quality issues. Those suppliers that are frequently out of tolerance and do not improve can be flagged and avoided for future products.

### Creating a supplier scorecard

Companies measuring the on-time delivery of orders, monitoring social compliance and overseeing a quality management program have the necessary information to create a supplier scorecard within the PLM solution. On a supplier scorecard, a rating system is created for each category based on predefined criteria

on which a supplier can be rated. Data to determine these ratings would come from a PLM solution and other downstream systems.

An important benefit of a supplier scorecard is to use the scorecard as a tool to collaboratively work with suppliers. If a supplier is rated “unacceptable” in a category, the company can assist the supplier in creating a corrective action plan to improve the supplier’s performance. For example, let’s say that a supplier’s quality rating is consistently below the acceptable level. Further investigation identifies an issue with fit samples consistently being out of tolerance. Using this information, the company can assist the supplier in developing a plan to improve the supplier’s production consistency. Another example is if the supplier has been inconsistent with on-time purchase order (PO) deliveries. The sourcing team can review the orders and determine if the late deliveries include products that were added late, not allowing for sufficient production time, or if the supplier continually misses the same production-tracking event. Once a cause is determined, the sourcing team can assist the supplier in developing a plan to correct the issue. By creating the scorecard in PLM, production and sourcing teams can easily review supplier ratings and use the scorecard as a tool to strengthen supplier relationships by advising and assisting them with performance improvements.

### Final word

Companies have spent a great deal of time and resources implementing PLM systems to manage their product development activities. The next logical step is to leverage those investments and the resulting wealth of information for use in other parts of their supply chains to improve overall execution of the end-to-end product lifecycle.

Leveraging the Supply Chain Control Tower with supplier scorecards, companies can be in a much better position to track and measure production and delivery, verify social compliance, manage product quality and quickly respond to exceptions. These capabilities enable companies to be better prepared to handle issues as they arise and proactively minimize the risk of future supply chain disruptions. ■

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*The Parker Avery Group is a boutique strategy and management consulting firm that is a trusted advisor to leading retail brands. The firm specializes in merchandising, supply chain and the omnichannel business model, integrating customer insights and the digital retail experience with strategy and operational improvements. Parker Avery helps clients develop enhanced business strategies, design improved processes and execute global business models by combining practical industry experience with proven consulting methodology to deliver measurable results. For more information visit: [www.ParkerAvery.com](http://www.ParkerAvery.com); contact@parkeravery.com; 770-882-2205.*