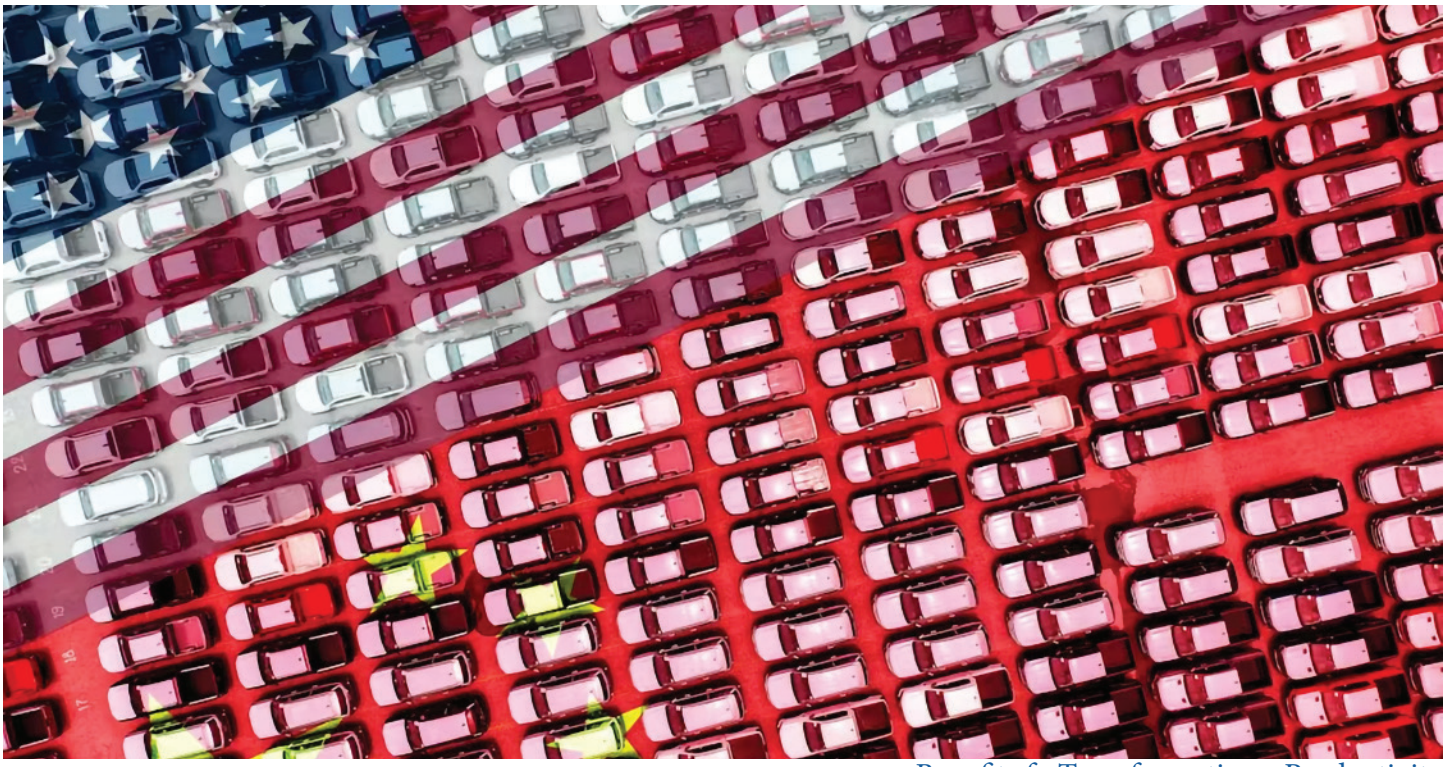


Taking a technological approach to blunt the punch from tariffs

Predictive analytics can help play a role in reducing manufacturing costs, optimizing productivity and boosting quality.

Vick Vaishnavi

While tariffs have been an expected cost of every U.S. manufacturer receiving imported goods dating back to 1789, most tariffs have been fairly minor—until 2025.

The sweeping new tariffs enacted (or sometimes only threatened or withdrawn) by President Trump across almost all U.S. trading partners have been pitched as a means to strengthen the domestic economy by removing reliance on overseas trading partners and encourage companies to manufacture domestically.

Let's be clear: U.S. manufacturers—from the smallest snack-food makers to the largest OEMs that rely on parts, supplies and manufacturing services from overseas sources—are responsible for paying the tariffs. These costs can have devastating consequences in the short term, which often leave companies with no option but to pass the costs on to consumers and find new ways to remain competitive and maintain a loyal following.

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So, how can manufacturers remain financially strong, competitive and maintain loyal customers in this environment?

It requires a relentless focus on the role of quality in not

only maintaining an edge, but in streamlining costs and weeding out costly errors that only compound the costly consequences of rising trade tariffs.

Driving quality through AI-driven predictive analytics

When trade tariff uncertainty is the order of the day, predictive analytics will increasingly play a role among manufacturers everywhere as a means to maintain quality and put data to work to anticipate issues and address them.

Predictive analytics is essentially the use of statistics, machine learning and data mining to analyze historical and real-time data to help manufacturers not only anticipate future events but also optimize processes and reduce operational risk.

One key element of predictive analytics is predictive maintenance. By analyzing data from sensors on equipment—such as temperature, vibration, or pressure—manufacturers can forecast when a machine is likely to fail or require servicing. This allows them to schedule maintenance only when needed, to reduce downtime and avoid costly repairs.

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Predictive analytics also plays a key role in quality control. By analyzing patterns in production data, manufacturers can detect early signs of defects or process deviations before they result in product recalls out in the field.

Since predictive analytics leverages enterprise-wide historical data, combined with sales, market and seasonal trends it allows manufacturers to estimate future demand more accurately, for better inventory planning, workforce growth and supply chain management.

Predictive analytics has captured the support of a wide range of organizations. According to a research study by The Insight Partners, the global market size for predictive analytics in 2022 was $12.49 billion, and expected to rise to $38 billion by 2028.

While predictive analytics can go a long way toward helping manufacturers reduce costs, boost quality and resolve the uncertainty caused by trade tariffs, there are other ways manufacturers can cope. Consider the following:

Diversify the supply chain. In a global supply chain, each country has its own rules of import and export. For commodities, there can be large differences in the types of tariffs levied. It's important to have visibility into your options, researching where goods can be sourced from to receive the best quality and rates.

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Developing relationships with domestic suppliers can also mitigate tariff impacts while potentially reducing logistics costs and lead times. In some cases, there may be no option but to source in a region that has tariffs, but gaining visibility across the supply chain and identifying new sourcing options can give you better control. It also can help you ensure that quality is maintained across your critical suppliers, who also may be looking to cut corners during a time of tariff concerns.

Revisit design. Against the backdrop of a changing global market, you may want to consider going back to the drawing board. Can the underlying technology or design be changed to use other components not subject to international tariffs?

Value engineering—systematically analyzing product components, their quality elements and functions to optimize cost-value relationships—also can be used to identify opportunities to maintain quality while reducing material usage or simplifying production.

Maintain strict adherence to regulatory requirements. A simple way to ensure hefty fines and penalties don't further impact the bottom line, is to make sure that you're adhering to compliance processes for industry requirements such as ISO 9001, 14001, 27001; FDA standards; and other industry-specific regulations.

See also: How predictive AI can help manufacturers forecast demand for their products

Integrating automatic triggers through enterprise-wide, integrated systems can not only alert you to pending compliance requirements or inspections, but they can also help you more easily maintain a digital documentation trail while proactively identifying areas that can potentially cause quality erosion.

Build strategic partnerships. Collaborative partnerships with suppliers, technology firms and even other manufacturers can help maintain quality despite tariff pressures. Shared resources for testing and certification, and collaborative problem-solving can distribute costs while ensuring consistent quality standards.

Additionally, for situations where it's not possible to avoid high tariffs, strategic acquisitions or partnerships can give you greater control over your supply chain, reducing vulnerability to tariff fluctuations.

While tariffs create immediate financial pressures, the key to long-term success is never to never take your eyes off quality. Manufacturers that maintain quality standards by leveraging predictive analytics and other AI-driven tools, as well as taking a closer look at design, trading partners and internal processes can weather any challenging economic period and emerge stronger.

Vick Vaishnavi is CEO of ETQ, a division of Hexagon, and is responsible for leading the overall business strategy and operations of ETQ. As a seasoned business and technology leader, he has extensive experience guiding software and other technology firms to industry leadership and business growth.