Materials, Manufacturing & Construction

Optimize Your Whole Business

How AI-Powered Data Automation Can Transform the Manufacturing Industry

CapTech

If "The Star-Spangled Banner" ever goes out of fashion, the steady hum of industrial automation rumbling throughout the country would make a worthy replacement. First implemented by the Ford Motor Car Company at the turn of the century, automating physical processes such as assembly, inspection, and testing quickly became essential to staying competitive in the manufacturing industry.

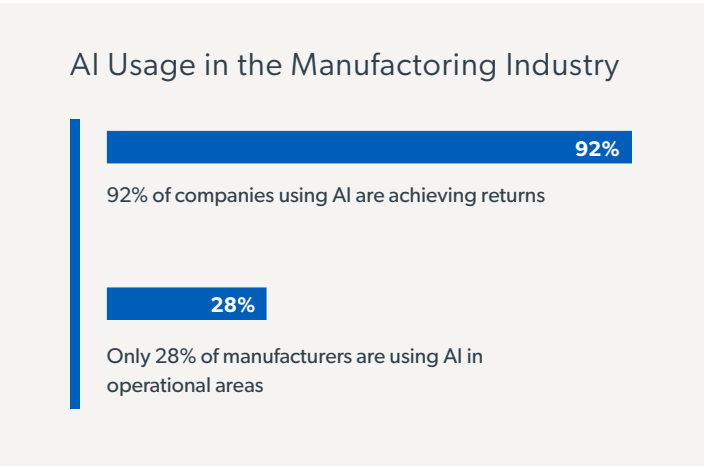
But many manufacturers seem content with only automating a portion of their business. Despite the industry's reliance on automation of machinery, it underutilizes the automation of data, especially when it comes to the collection, analysis, insights, and value that can be driven through artificial intelligence (AI).

A 2022 study on data and AI initiatives found that 92% of companies using AI are achieving returns, but according to a survey of manufacturers, only 28% of manufacturers are actually using it in operational areas, which include plant floor data analysis, preventative maintenance, supply chain management, and quality management.

This disparity may be due to the differences in data regulation across industries. While regulations for financial and healthcare sectors are much more stringent, essentially forcing businesses to capture clean and consistent data, in manufacturing, there is little regulation for how the countless products and parts ware catalogued and tracked.

Leveraging AI to automate manufacturing data can bring powerful benefits and help the manufacturing industry catch up to its data-driven counterparts. It may seem daunting, but integrating AI into your data strategy might be quicker to stand up than you think.

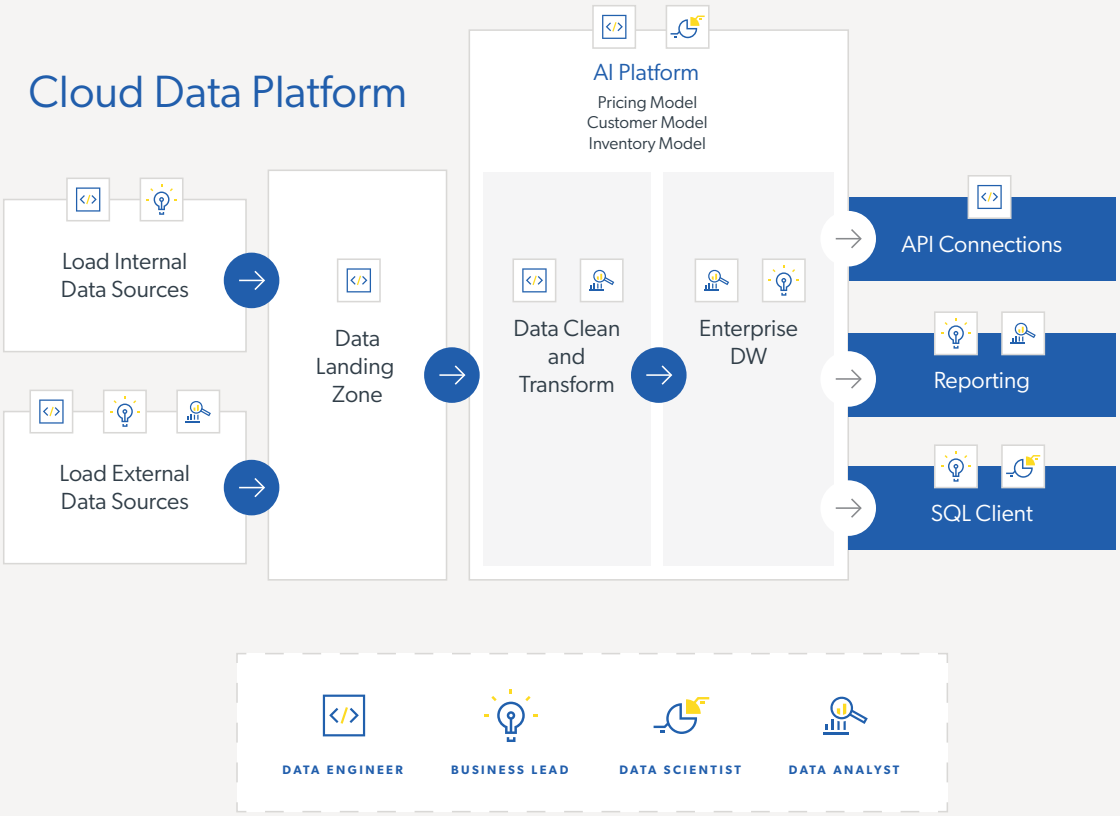
All you need is access to the right data – and the right team to orchestrate it – and you can enable major manufacturing optimizations.



Data Orchestration

When we talk about optimizing the "whole business," we're referring to three specific areas: revenue, customers, and inventory. To optimize these areas through AI-powered data automation, you need a diverse team of business leads, data scientists, analysts, and engineers to build a data orchestration platform.

Data orchestration is the process of collecting, ingesting, cleansing, and curating external and internal data and deploying it for different end user needs. It is the foundation for high quality machine learning framework models – the lynchpins of automation – which enable reusability and scalability.



Optimizing Revenue with Data Automation

When you're an industrial company with millions of SKUs, you're likely sitting on a mountain of useful data. And that data can be transformed into a revenue optimization powerhouse.

One way to use data to optimize revenue is through dynamic pricing models, which we implemented for a global supplier of industrial automation solutions with more than 30 million SKUs across multiple subsidiaries, in roughly six months.

First, we brought all of the company's disparate data sources into one platform and organized it to be more useful and meaningful. Then we pulled purchase history data, seasonality data, economic data, weather data,

competitor data, and more into a mixing model and trained it to predict the optimal price of each product. Updating in real time and refreshing itself daily, the manufacturer's AI-powered dynamic pricing model optimizes margins to maximize revenue generation.

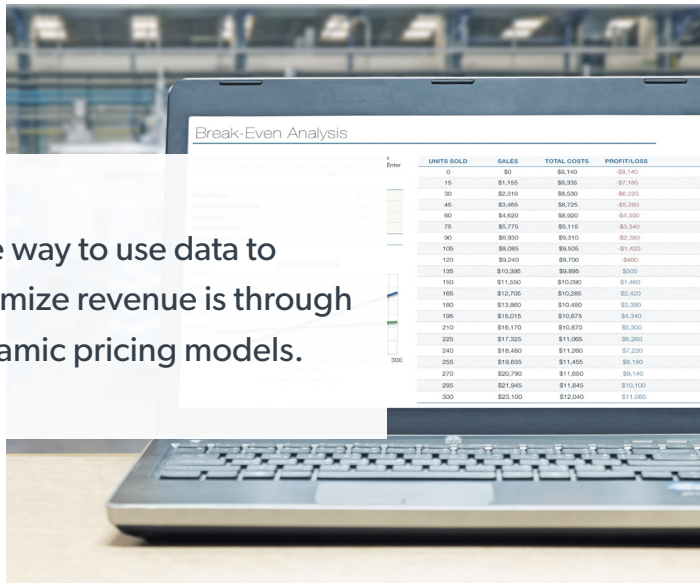
Beyond optimizing SKUs, manufacturers can also leverage AI and data analytics to enhance the speed and accuracy of their quoting, ordering, and inventory process.

Optimizing Customers

Data can also be used to predict customer behavior and optimize accordingly. AI-powered propensity modeling can determine the likelihood of a customer taking a specific action, such as their propensity to engage, make a purchase, spend over time, and churn. These models can then be used to predict a customer's lifetime value.

Manufacturing companies could benefit enormously from using AI to better understand their customers' buying behavior. One way to drive revenue through predicting customer behavior would be to target which specific products or SKUs a customer would be most likely to purchase at any point in the future, e.g., next day, next month. This allows marketers to begin to target segments of these high-propensity purchasers for specific product offers.

Through leveraging a data integration strategy as mentioned above, we can develop reusable predictive data assets (e.g., a feature store) to enable data scientists to spin up individual models for each product or product segment in a matter of minutes. This ultimately accelerates a business' ability to deploy dynamic marketing offers across multiple channels.



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Optimizing Inventory

If your company has a product catalogue that runs in the millions, any change in inventory is going to have cascading effects on business functions. While surplus inventory can lead to higher storage costs, a shortage can hurt sales and frustrate customers.

Using data and AI can forecast excesses and shortages, and predict how adding or removing products will impact customer behavior, sales, or transaction accuracy.

For example, to optimize inventory planning for thousands of SKUs across multiple geographically dispersed locations, machine learning models can track the quantity of items sold, shipped, ordered, and received, and accurately forecast demand based on demand signals, seasonal changes, and historical trends.

Consider Nestlé, who wanted to harness AI-powered data automation to enhance its forecast accuracy and reduce enough inventory to make substantial savings. Using a demand-driven forecasting model that tracks what demand signals are actually influencing consumers' purchasing behavior, Nestlé was able to completely automate 80% of its forecasts and remove 14-20% of its inventory safety stock while still meeting demand. That means if Nestlé has $100 million in inventory, the model will save $14-20 million.

Becoming a Modern Data Organization

By accessing the right data, understanding how to take advantage of that data, and using AI to power predictive modelling, you can optimize your entire manufacturing business, not just the production floor.

Even organizations that are not yet data mature can stand up advanced data automation solutions in mere months. It's likely your organization has enough customer and transactional data to get started – you just need the right team with the right approach.

AI can help you extract significant value from your data and use it to optimize revenue, customers, and inventory.

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