

Big Data for Manufacturing: The Machine of the Future



IBM states that 53% of manufacturing organizations leverage big data and analytics to generate competitive advantage. These organizations understand that an increasingly global and competitive landscape necessitates digital innovation and transformation. Big data is a key piece in staying at the industry forefront to better produce, maintain, and ship high-quality goods.

Leading manufacturers are already reaping the benefits of big data. Using big data analysis, the Coca-Cola Company was able to save ~\$45M annually. Over two years, John Deere (Deere & Company) saved \$900M in inventory control thanks to big data. These organizations demonstrate the huge potential of the data being produced at each level of the manufacturing process.

If you're in the manufacturing industry, you may be wondering how you can unlock the power of big data within your organization.

First, What Is Big Data?

The term "big data" is often spoken about, but its meaning is rarely made clear. To truly unlock the massive value of big data, it's important to first understand what it is and what it isn't.

Big data is a comprehensive term for all the processes and techniques that enable storing, organizing, and analyzing massive data sets. This can include billions of rows and parameter values. Sources for big data can include machines, devices, operators on the factory floor, and every level of your organization. For manufacturing, big data is made up of business-critical information on sensors, pumps, motors, compressors, and conveyors.

As you can see, it's neither a single piece of software nor is it purely hardware-related. Simply moving your existing

data infrastructure to the cloud also won't immediately unlock the value of big data. Getting the fullest return on investment for the massive data sets being produced requires a data ecosystem, where the software your organization uses supports the infrastructure you already have in place.

Big Data Benefits for Manufacturing

One of the biggest benefits that big data can unlock is the ability to incorporate machine learning into your organization. Big data is necessary to feed algorithms that can predict, triage, and proactively solve problems within your organization.

Traditionally, manufacturing and other organizations use linear regression and absolute numbers to identify issues and opportunities. This can be in the form of human-



monitored data visualizations, where a large drop in a machine's output points to an issue in production. With machine learning, this process becomes automated and streamlined.

Machine learning on top of big data allows the identification of large-scale covariance and correlation, making root causality proactive and automatic. The benefits of big data mixed with machine learning extend to many other areas of the manufacturing process and are especially useful for these data sets, which are often noisy and especially large. This combination can be used to proactively identify machine failure, predict machine degradation, and optimize machine efficiency.

Big data helps manufacturers by:

- **Optimizing production**, drawing on machine data to find the optimal processes for your organization.
- **Streamlining supply chain management** using data to match supply and demand to prevent overproducing a product.
- **Maintaining high quality products**, identifying patterns and root causes in large data that includes defects and malfunctions.
- **Saving on production costs** when combined with alert systems, which can proactively warn if a machine is going to stop working and cause issues.
- **Supporting maintenance planning and optimization** based on historical data that helps with scheduling low-cost, non-disruptive downtimes.

- **Enabling sustainable practices** through optimizing supply chain production and machine management to prevent waste and use energy efficiently.
- **Evaluating risk** using big data to calculate and predict risk and take measures against it.

Unlocking Big Value in Data

Big data and its benefits rely on key principles to be in place. Without these, your organization won't be able to reap any of the benefits of big data. These include:

- Data quality
- Data maintenance
- Observability
- Governance and compliance
- Shared definitions
- Built-in analytics tooling

Modern has built DataOS to include all of these elements, out of the box. It is an entire data ecosystem layered on top of your legacy or modern data infrastructure.

Learn more about Modern's DataOS [here](#). Or [schedule a demo](#) today to learn how DataOS can help you unlock the power of big data for your organization in a matter of weeks.

BY C. BOSTIAN



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The Modern Data Company
306 Cambridge Ave
Palo Alto, CA 94306

[TheModernDataCompany.com](https://www.themoderndatacompany.com)
info@TMDC.io