7 Ways Big Data Can Boost Your Manufacturing Efficiency
By Callan Ganim

Some of the biggest changes in the manufacturing industry over the past several years stem from "big data," the term loosely used to describe advanced analytics. Just as major league baseball managers are using new analytical means to measure the true value of players, manufacturers are increasingly relying on big data to drive their decisions.

So what can big data do for you? In this high-tech era, use of analytics is essential for increasing productivity and efficiency without sacrificing quality. Additionally, the new metrics can lead to better business practices and spur innovation. If you haven't adapted to the latest changes in the industry, your company may be left behind.

There are seven key areas where big data is making inroads in manufacturing:

1. **Product quality:** For most manufacturing companies, product quality is "job one." Frequently, manufacturers already possess the data needed to improve quality on assembly lines, but they haven't been able to connect to data sources in a way that provides concrete action.

For instance, using predictive analytics in testing may provide significant cost savings, but a single product could require hundreds or even thousands of tests. This number can be dramatically reduced through pattern recognition and analysis of big data. The analytics will determine the number and types of testing that are essential. Furthermore, sensor data analytics can identify and detect defects earlier, reducing the time and money spent on adjustments to processes and procedures.

2. **Maintenance:** Operational data from virtually any type of machinery can now be collected and analyzed, all in real time. Thus, the need for maintenance and preventative measures can be predicted well before measures are actually needed. This reduces downtime and eliminates costs associated with warranties.

Big data also identifies machinery that should be replaced and extends the life of equipment that is kept in good working order. Manufacturers can avoid sudden failures that might cripple a business without any warning.

3. **Build to order:** In recent years, the "build-to-order" (BTO) approach that was prevalent in the automotive industry has been extended to other sectors, including aviation, computer services and even basic consumer goods. This trend shows no sign of abating.

However, to recognize sustained growth from BTO, a manufacturer must construct a platform to efficiently analyze customer behavior and sales data. Specifically, big data is added to project order volumes for each configuration and to determine profitability. Accordingly, manufacturers can incorporate changes in the supply chain that address problems and provide solutions.

4. **Warranties and recalls:** Issues plaguing manufacturers after sales are made – namely, warranty claims and recalls of products – can spiral dangerously out of control if left unchecked. Big data can help identify potential trouble spots in the manufacturing process and head off problems before they occur. Not only does this save companies money and aggravation, it results in better, and more marketable, products.

5. **Real-time tracking:** To maximize quality and quantity, manufacturers must track and assess data from their production lines on a daily basis, preferably in real time. Continuous input from assembly lines, including valuable sensor data, can be factored into decisions and combined with financial information. This requires near-instant communication between the plant floor and the C-suite.

Use of big data in daily activities leads toward growth opportunities, maximization of resources and potential cost savings. However, as is usually the case, you must have the right tools to do the job right.

6. **Enterprise comparisons:** Advancements in big data make it possible to quickly compare production at different sites and identify the reasons for any differences. By using predictive models, manufacturers can focus on entire markets, developing "what-if" scenarios to predict various outcomes.

These insights can help drive global decisions such as where to build factories, when certain work sites should be closed or relocated and when and how new products may be introduced into the marketplace. Big data makes the difficult questions easier to answer.

7. **Supply chain management:** Suppliers are sharing big data with manufacturers to provide more transparency and facilitate communication between parties. For example, a manufacturer can pinpoint delays and react accordingly, thereby reducing waiting time. In the same vein, manufacturers can present production metrics to suppliers to accommodate their needs.

With greater visibility into supplier quality levels and other performance data, manufacturers are better able to assess, manage and negotiate risk management aspects. Because supplier needs are quantifiable, companies can make informed risk management decisions and develop appropriate strategies.

Big data analytics can boost manufacturing efficiency, help executives make smarter decisions and discover new ways to drive innovation moving forward. Those seeking a competitive edge will need to find ways to integrate and manage essential data to increase profits and improve operations.

Do you have questions about how big data can help improve processes in your manufacturing business? Contact Callan Ganim at 440-449-6800, or email Callan.