Seven Ways Big Data Can Support ERP

Right now we're in transition when it comes to big data.

The promise of big data is well understood; companies that invest in big data grow roughly 50 percent faster than those that do not, according to the most recent Dell Global Technology Adoption Index report. Supply chain executives understand this promise, too; roughly 64 percent of supply chain executives consider big data analytics a disruptive technology that will lead to long-term change within their business, according to the latest SCM World Chief Supply Chain Officer Report.

Yet, companies are only using 12 percent of the data at their disposal, according to Forrester research. This is partially because businesses are still weary of the investment necessary to make sense of the data, according to Dell; 29 percent of companies surveyed in the Technology Adoption Index cited IT infrastructure costs as the main barrier to fully using data.

The difference between the promise and the reality of big data currently presents a sizeable competitive advantage for businesses that seize the opportunity, especially when it comes to ERP.

"Leveraging big data with ERP offers a tremendous opportunity for manufacturers to improve visibility and performance," says Steven Coolidge, senior ERP platform product manager for manufacturing and distributions solutions provider, Epicor.

From sales forecasting and scheduling to predictive maintenance and enhanced quality control, big data can improve ERP in many ways. Here are seven of the most important areas where big data helps ERP.

1. Sales Forecasting

When combined with ERP systems, big data can help businesses predict demand for specific items.

"Retailers have significant data in their ERP, including information about the supply and inventory of various products," says Benoit Gruber, the vice president of global product marketing for ERP maker, Sage Software. "Retailer can use an ERP to analyze sales patterns for older product models and predict demand for the new one."

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For instance, a retailer could use big data to analyze how the release of a new iPhone model affects the sales of headphones and computer peripherals.

2. Scheduling

Real-time feedback from Internet-of-Things data can give manufacturers a leg up on scheduling efficiency.

"A customer we are working with in high tech electronics manufacturing is using machine data for advanced analytics in order to understand lead time and process variability," says Dale Glover, the vice president of manufacturing industry consulting for big data analytics firm, Teradata. "We are pulling start and stop times for individual steps in the manufacturing process, and looking at the process time and variation in each step of a complex manufacturing process."

Glover says this analysis enables the manufacturer to increase the accuracy of its ERP planning by refining the scheduling assumptions built into the workflow.

"ERP systems have never had the capability to either interrelate such data on the fly or process it," adds Ahmed Elragal, head of business informatics and operations management department at the German University in Cairo. "Now that is all accessible."

3. Process Efficiency

Embedding big data analytics in operations leads to a 10 percent or greater increase in supply chain efficiency, according to Accenture's report, Big Data Analytics in Supply Chain. The consultancy found that using big data within ERP systems instead on an ad hoc basis led to 1.3 times the supply chain speed.

"Keeping track of all the moving parts in the supply chain is one of the greatest challenges for many businesses," says Gruber at Sage. Big data can "improve supply chain visibility and give companies a more complete view of where all of their assets are at any given time."

4. Delivery Network Optimization

This is especially true when it comes to delivery networks, where geoanalytics based on big data can help supply chains improve delivery coordination.

"There are a large number of factors that must be taken into account to optimize delivery," notes Coolidge at Epicor. "Insights from big data can assist with routing to determine the most efficient single or multi-drop routes for deliveries based on distance, real-time traffic density and weather data."

5. Predictive Maintenance

Big data can help ERP systems better refine and predict equipment maintenance schedules based on complex environmental variables that affect performance and wear, too.

"We have a large oil company that has fully instrumented the oil field production operations with sensors," notes Glover at Teradata. "The major focus now is on doing day-to-day maintenance of equipment based its operational status versus using fixed time based intervals that have been used traditionally. Conditions now drive automated scheduling of maintenance activities in the ERP systems."

He adds that fleet owners also are using vehicle data combined with service records to predict sub-optimal fuel consumption scenarios and better predict things like engine failure.

6. Quality Monitoring.

The predictive capabilities of big data also can extend to product quality control. Monitoring of resource sensors such as water pressure, air pressure, temperature, and humidity can support the means for early detection of potential quality concerns and issues within the factory that can be addressed prior to product shipping, according to Coolidge.

"Another benefit of a big data approach in quality monitoring is in the synthesis of data from product surveys, social media, and blogs to provide insight into consumer concerns and quality issues about products that have already shipped," he says.

Big data improves supply chain reaction time by 41 percent, according to Accenture. When there is a product issue, the mix of big data and ERP systems can help ensure that issues are handled quickly.

7. Partner Knowledge Sharing

ERP systems can now better leverage information all along the supply chain thanks to big data and the cloud.

"In the past, integrating data between members of the supply chain has been a challenge," notes Elragal at the German University in Cairo. "Nowadays, with the power of big data in the cloud, business partner could easily integrate without having to care much about their own systems' complexity, since cloud is masking such details away."

This extra data, he says, can be used to further optimize logistics and the supply chain.

Big data analytics is a response to the proliferation of data that could potentially be harnessed for greater business insight and efficiency. ERP is about managing all aspects of company resources. It stands to reason, then, that ERP is the natural end point for big data.

"Rather than requiring a separate endpoint for big data presentations," Gruber says, "it's far more effective to include big data insights within existing business systems such as ERP."

What businesses need to figure out now is just how to appropriately make the transition. The marriage between big data and ERP is still a work in progress for many businesses.