

WHITE PAPER



Effectively Managing Big Data in Your Supply Chain:

How to take action now that will ensure success in the future.



Introduction

Envision a world where a device that sits on your desk is ready to take orders, track a shipment, or research information on command. Much like today's Siri, Echo, and Alexa, this device would sit idle and unobtrusive until you needed something, and then it would kick into gear to find out how many on-time orders your fulfillment company shipped last week, help you make a decision based on past buying patterns, or tell you how the storms that are brewing in the Southeastern U.S. will impact your estimated delivery dates.

What many companies don't realize is that with effective management of big data, this type of actionable information—and the ability to use it to make informed transportation and logistics decisions—is readily available. In fact, after accumulating terabytes of data over the years, most of today's organizations already have the foundational information *right within their own four walls*. The challenge lies in extracting this data, determining which of it is (and isn't) useful, and then turning that information into actionable insights. This is where good data management comes into play and allows companies to more efficiently and effectively orchestrate their global supply chains.



The need for good data management has increased as the volume of data has grown by astronomical leaps over the last few years. And as variety and velocity of data have grown, the usefulness of traditional data warehousing strategies has decreased exponentially. By 2025, research firm IDC believes, the total amount of digital data created by the world will reach 180 zettabytes, up from 4.4 zettabytes in 2013. The astounding growth comes from both the number of devices generating data as well as the number of sensors in each device; there are approximately 11 billion devices connected to the Internet now. The figure is expected to nearly triple to 30 billion by 2020 and then nearly triple again to 80 billion five years later.¹

¹ Kenellos, Michael, Amount of Data Created Annually to Reach 180 Zettabytes in 2025, What's The Big Data?, <https://whatsthebigdata.com/2016/03/07/amount-of-data-created-annually-to-reach-180-zettabytes-in-2025/>



The good news is that leading organizations have found creative, intelligent ways to harness their data and thereby gain competitive advantage. In this white paper, we'll explain what the term "big data" means to the typical supply chain, introduce effective strategies for managing and leveraging that data, show how one grocer is using predictive analytics to harness its own big data, and explain the "first steps" that companies need to take down the path to effective management of their big data.

What Exactly is Big Data?

The term "big data" is used in different ways depending on the company, scenario, and/or application in question. At its simplest, this term describes the *large volume of data—both structured and unstructured—that businesses manage on a daily basis*. More formally, Gartner defines big data as:

*High-volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision-making, and process automation.*²

In assessing the role that big data plays in a company's day-to-day business processes, it's less about the volume of data and more about what organizations do with the data that can have both short- and long-term positive impacts on the company. When the data is tapped and analyzed for insights that produce strategic, improved business decisions, for example, the outcomes range from enhanced competitive advantage to better customer service to improved bottom lines.

In *Ten Ways Big Data is Revolutionizing Supply Chain Management*, Forbes contributor Louis Columbus looks at how big data and advanced analytics are being integrated into optimization tools, demand forecasting, integrated business planning, and supplier collaboration and risk analytics. Columbus also singles out control tower analytics and visualization as key waypoints that are presently on the "roadmaps

of supply chain teams currently running big data pilots."

In *Supply Chain Talent of the Future, Findings from the Third Annual Supply Chain Survey*, Deloitte says the use of advanced analytics that "draw on the immense data sets created by supply chain activities" is quickly becoming table stakes for today's organizations. For example, companies are optimizing production runs and distribution plans by analyzing more than historical data. Using "predictive analytics," these firms are pulling in other data sources to anticipate, for example, how changes in the broader economy or competitive environment might affect demand for their offerings.

At beverage giant AmBev, for example, Deloitte says new tools combine data from several demand and replenishment planning processes to generate weekly forecasts for setting sales goals, production levels, and distribution plans. According to the report, AmBev's management credits this new capability with increasing product turnover rate by 50%.

In another example, Bernard Marr, author of *Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results*, says Rolls-Royce has "wholeheartedly embraced" big data to support its manufacturing operations across three areas: design, manufacture, and after-sales support.

"We have huge clusters of high-power computing which are used in the design process," says Paul Stein, Rolls-Royce's chief scientific officer. "We generate tens of terabytes of data on each simulation of one of our jet engines. We then have to use some pretty sophisticated computer techniques to look into that massive dataset and visualize whether that particular product we've designed is good or bad."³

² Gartner IT Glossary, <http://www.gartner.com/it-glossary/big-data/>

³ Marr, Bernard, The Most Practical Big Data Use Cases Of 2016, Forbes, August 26, 2016, <http://www.forbes.com/sites/bernardmarr/2016/08/25/the-most-practical-big-data-use-cases-of-2016/3/#361a56225672>



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*Dan Clark
Founder and President, Kuebix*

5 Effective Data Management Strategies

For the single-location distribution firm that's shipping goods locally to the midsized manufacturing firm that has locations across North America to the large, multinational firm whose products are used by consumers around the globe—and every company in between—the need for effective big data management is both real and pertinent. Juggling terabytes of data while trying to run daily operations, put out fires, and forecast for the future has become extremely complicated. Thankfully, the task is made easier by cloud-based applications that allow firms to connect in one place all of their transportation and logistics data, and then use that information to make better, forward-looking decisions.

"Shippers need one platform that acts as a central repository, and that captures data across multiple systems and providers," said Dan Clark, founder and president of Kuebix, whose platform allows users to effectively analyze transportation costs, generate scorecards on carrier performance, and manage their businesses based on a wide range of intelligence and reports. In assessing the various ways that shippers are already using software platforms to streamline the big data management process, Clark breaks the overall picture down into five distinct categories. They are:

- 1)** Connect all business partners on a single, integrated, cloud-based platform. When data is coming at you from all different types of users, platforms, and applications, the inefficiencies rise exponentially. The best way to avoid this challenge is by connecting all of your business partners, suppliers, customers, and other entities via a single, cloud-based platform that's accessible 24/7/365. Consider the company that is working with a carrier that has numerous divisions (brokerage, trade show, white glove, high value, etc.) and that needs a centralized repository for its

very fragmented, enterprise resource planning (ERP)-based data environment. By taking a more holistic approach and consolidating all service offerings onto a centralized transportation management system (TMS), companies can gain access to multiple service offerings and carriers via that single application. In return, the shipper and its carriers gain extreme efficiencies and improved data management capabilities.

- 2)** Leverage the data to improve global logistics planning. To achieve the biggest benefit from their big data management approach, companies must be able to incorporate better logistics planning into the equation. Otherwise, all they're doing is analyzing and tracking the data without integrating it into their forward-looking business decisions. To avoid this trap, consider exactly how incoming data can be used to plan logistics movements (e.g., freight, ordering, carrier relationships, etc.). Then, consider how all of the data that's in your central repository can make your firm more efficient using its current resources. This, in turn, leads to real efficiencies on the transportation and logistics front.
- 3)** Break down information silos and gain real-time visibility across the supply chain. Collecting big data is one thing, but actually gaining visibility over that information—and then using it to run your business smarter—is a completely different exercise. By gaining real-time visibility over the information, and then sharing resulting insights with all stakeholders (e.g., suppliers, customers, carriers, accounting, logistics, warehousing, etc.), you can effectively break down any traditional information silos that might exist within your supply chain and begin to see real results from your data management initiative.



4) Optimize internal processes using regular audits. The best way to ensure that your company is conducting business in the most optimal, profitable manner is through the use of regular audits. Unfortunately, these exercises are often incomplete or ineffective for companies that lack complete visibility of their end-to-end supply chains. To best answer questions like "Was there a better way we could have moved this freight?" or "Were there other, more cost-effective modes available?" companies need a solution that can pull all of the data together and produce an audit that can be used to not only view historical processes, but also find better ways to do things in the future.

5) Carry your best decisions forward while eradicating any bad habits or poor decision-making. In today's competitive business environment, companies simply can't afford to fly by the seat of their pants when it comes to transportation and logistics. Picking a carrier based on personal relationships or making 11th-hour freight decisions because someone developed an inaccurate forecast are situations that can be avoided with the use of a centralized technology platform. And when mistakes are made, the platform can send out alerts in real time to make sure the same issue doesn't rear its ugly head

again in the future. A food manufacturer that was forced to spend 35% more on freight during the "high season" because it didn't plan ahead, for example, can use data to avoid repeating that costly mistake by leveraging the business intelligence that lies in its cloud-based transportation management platform. "When you have the historical information at your fingertips," says Clark, "you can better plan for events and leverage the business intelligence to improve your service and your bottom line."

The Full Lifecycle: Big Data in the Supply Chain

Putting time and effort into big data management across the supply chain pays off. In *5 Data-Driven Supply Chain Challenges to Overcome in 2016*, Spend Matters outlines these key benefits that companies are seeing from their efforts:

Meet rising customer expectations. Over 90% of dissatisfied customers will not do business with a brand that failed to meet their expectations.

Increase cost efficiency. As an example, companies could save a significant amount of money in supplier spend every year simply by leveraging trusted supplier data quality.



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Wayne Bailey,
SVP of Supply Chain and Logistics, Weis Markets

Monitor and manage supply chain compliance and risk. Sixty-one percent of companies regarded as leaders in supply chain management consider supply chain risk management very important and recognize the need for capabilities that can enable them to gain greater visibility and predictability across their supply chains, according to Accenture.

Make supply chain traceability and sustainability a priority. Traceability is often directly linked to supply chain risk. For 30% of companies, traceability and environmental concerns continue to be the biggest issues to watch out for.

Remain agile and flexible in volatile times. The ability to quickly and flexibly meet customer fulfillment objectives is rated the second most important driver of competitive advantage across all industries.

For regional supermarket chain Weis Markets, Inc., of Sunbury, Pa., effective data management has become a key business imperative that allows the company to operate at a very high level of efficiency. Weis began a project with logistics technology provider Kuebix to help the chain gain better visibility of its supply chain and control the process flow, financials, and cost of goods.

Up until that point, the majority of Weis' shipments were vendor controlled, leading to process inefficiencies and higher cost of goods. Using Kuebix TMS and Kuebix Managed Services, the company has been able to more efficiently manage its inbound shipments while partially outsourcing its transportation management. The managed service package includes a unique vendor compliance program offered

exclusively through Kuebix. The Vendor Compliance Program helps Weis hold its vendors and carriers accountable for behavior that drives inefficiency and cost into a company's supply chain.

Since implementation, Weis has been able to smooth its inbound flow and reduce waste. The program has also motivated behavioral changes throughout the supply chain that have led to increased efficiency. Overall, this project has enabled Weis to convert 35% of shipments to Weis-controlled facilities, reduce its landed cost of goods, and break apart the cost components to increase its bottom line.

"Kuebix has become the foundation of our managed transportation services program for all inbound shipments," said Wayne Bailey, Weis' SVP of supply chain and logistics. "Kuebix has provided Weis the necessary information for all stakeholders to operate at the highest level of efficiency."

When the Music Stops... Will You Have a Chair?

If your company has been collecting data for years and wondering what to do with it, it's time to learn how to use it to grow your business and gain a competitive edge.

According to *SCM World's* latest Chief Supply Chain Officer Report, 64% of supply chain executives consider big data analytics a "disruptive and important technology," and are now setting the foundation for long-term change management within their organizations.⁴

Achieving those long-term change management goals won't be easy. Companies that have accumulated huge volumes of siloed data, for example, typically lack the resources and tools needed to manage that information and put it to good use within their own operations. "Where the largest Fortune 100 firms may have good data management programs in place," says Ray DeSabato, Kuebix's CEO, "as you begin dropping down to midsized and smaller companies, the ability to extract data from those silos and actually use it to your advantage becomes less and less."

⁴ Columbus, Louis, Ten Ways Big Data Is Revolutionizing Supply Chain Management, Forbes, July 13, 2015, <http://www.forbes.com/sites/louiscolombus/2015/07/13/ten-ways-big-data-is-revolutionizing-supply-chain-management/#6c2fbf063d38>



To overcome this challenge, the best first step is to take inventory of current, available data and then decide how that information can be parlayed into actionable business intelligence. Then ask yourself what data—from a strategic perspective—will truly help your company achieve its current and future goals. “Figure out what you have at your disposal today, where the data gaps are, and how you can bring everything onto a single platform that will allow you to capitalize on the data,” says DeSabato, who likens data management to the game of musical chairs.

“Good data management is an imperative that companies have to consider and implement sooner rather than later,” he continues. “Ignore this need and when the music stops, you’ll be the only one who doesn’t have a chair.”

About Kuebix

Kuebix provides a disruptive SaaS TMS built on the latest cloud technology that is changing how companies purchase and manage freight. The Kuebix platform is unique in that it is well suited for smaller companies, but will scale for the largest enterprises or the most complex supply chains. Companies start with Kuebix’s core technology, Kuebix TMS, a next generation logistics solution offering freight management, financial management, and analytics for a low monthly fee. More complex supply chains can then add Premier Apps and Integrations to configure the ideal TMS for their exact business needs. Finally, Kuebix offers Managed Services with unique revenue-generating programs to companies looking to partially or fully outsource transportation management.

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