

## Supply Chain Management Series

### Part Three: The Value of Data Analytics in Supply Chain Processes (May 2024)

As we learn from the business world, we want to share that information with our community of educators and business professionals. Several recent focus panels on the topic of supply chain management (SCM) have highlighted an increasingly important skill: data analytics.

This Action Brief explores the fundamentals of data analytics and how it can be wielded to increase supply chain efficiency and decrease supply chain costs.

#### What Is Data Analytics?

As supply chains continue to grow both in size and complexity, the amount of data traveling through the supply chain has, unsurprisingly, increased dramatically. Multiple variables have led to this increase in data traffic. The [e-commerce boom](#) of the 2020s forced many supply chains to reorient their design around a more personalized, consumer-driven approach.

Since personalization requires more customer data to cycle through the supply chain, e-commerce has exponentially increased the sheer amount of data present in most supply chains. Recent advances in technology have also demanded a greater grasp of data (for more on this topic, check out our [April 2024 Action Brief](#) on supply chain management and artificial intelligence).

These factors, among others, have solidified the role of data analytics in supply chain management. [Data analytics](#) is the process of evaluating or interpreting data for the purpose of making decisions or solving problems. Data analytics encompasses a [massive range](#) of business activities, from collecting sales data on a specific product within a specific timeframe, to developing a comprehensive marketing plan for an entire company.

Data analytics is typically divided into four subclassifications:

- **Descriptive analytics**—Using data to identify or describe an outcome
  - *“What happened?”*
- **Diagnostic analytics**—Using data to identify the root cause of an outcome
  - *“Why did this happen?”*
- **Predictive analytics**—Using data to forecast or estimate future outcomes
  - *“What is going to happen?”*
- **Prescriptive analytics**—Using data to make recommendations or determine solutions
  - *“What should we do?”*

It would be an understatement to consider data analytics a “tool”—or even a “strategy”—within supply chain management. Data analytics is, quite simply, a fundamental component of business management and an absolutely [essential skill](#) in the modern work environment.

Participants in recent supply chain futuring panels unanimously reiterated its importance in supply chain management and logistics. Panelists referenced key skills and trends within data analytics—such as data interpretation, data entry, data visualization, data organization, and data storage—and likened data analytics skills overall to vital soft skills, such as communication and critical thinking, in terms of sheer importance to supply chain management.

But how does data analytics actually help supply chains? The high-level benefits of data analytics in supply chain management are: 1) increased efficiency and 2) reduced costs. To better understand how data analytics materially impacts supply chains, we'll explore a few examples of each benefit.

### **How Data Analytics Increases Supply Chain Efficiency**

A crucial iteration of data analytics in SCM is forecasting. Shipping giant [Maersk](#) explains supply chain forecasting in the following way: “Supply chain forecasting combines data from past supply chains with insights and understandings about demand to help you make the best decisions for your business.”

Forecasting is an essential ingredient to supply chain efficiency. In an industry that lives and dies on meeting customer demand, the ability to predict future trends, events, and environments is invaluable. While there are [many different forecasting methods](#), they are all fueled by accurate, abundant, and understandable data sets.

A process closely related to—but slightly different than—forecasting is [production scheduling](#). Sometimes called production mapping, it is the process of planning and managing the production of goods and services to meet demand and maximize supply chain efficiency. Much like forecasting, production scheduling demands an adequate amount of data—and by extension, data analytics—to streamline manufacturing processes. Crucial production factors such as [machine utilization](#), performance of industrial equipment, [availability of staff](#), and quality and accessibility of [capital goods](#) can be accurately captured by data and applied to production scheduling through data analytics.

### **How Data Analytics Saves Money Across the Supply Chain**

While increased efficiency itself will save supply chains money in the long term, there are also more direct ways that data analytics can cut costs for supply chain professionals everywhere.

For starters, data analytics can be used to implement effective [spend controls](#). Spend controls monitor and manage purchasing decisions and processes across a supply chain, and they are [incredibly important](#) in supply chain management. Because supply chains involve so many interconnected entities and systems, they are prone to overspend if stakeholders are not on the same page.

For example, [medical and hospital supply chains](#) often struggle with excessive spending. Due to the high cost of specialized medical devices combined with the widespread norm of discretionary spending in the medical industry, the average hospital [overspends by roughly \\$12 million](#) on supply chain costs. However, with the implementation of spend controls informed by accurate data, supply chains of all kinds are discovering more [cost-effective ways](#) to meet customer demand.

Data analytics can also save supply chains money through [supplier rationalization](#). Supplier rationalization is the process of consolidating the number of active suppliers in a supply chain to streamline costs and resources. Supplier rationalization focuses on [building high-value relationships](#) with a select number of suppliers rather than overburdening the supply chain with copious vendors. In other words: *quality over quantity* when it comes to supply chain procurement.

But for supplier rationalization to be effective, it is crucial that supply chain professionals select the right suppliers for their supply chain. This is where data analytics enters the picture. Supply chain managers can incorporate [external and internal data](#) to select the right suppliers for their supply chain. Past contracts, purchasing history, customer feedback, market research, industry benchmarks, and surveys are all useful sources of data that help inform supplier decisions. The right data paired with the right evaluation will always yield the right supplier!

### **A Final Note**

Keep in mind the second element of the adage above: “the right evaluation.” This goes beyond simply understanding what the data are telling you. This means having the ability to translate that understanding into action. Multiple supply chain professionals in a recent panel described this notion as “telling a story with data.” This concept is what lies at the core of data analytics. Without a cohesive story—the crucial link between the data and the supply chain—decisions cannot be made.

### **Links for Further Reading:**

- [“How Data Analytics Can Strengthen Supply Chain Performance”](#)
- [“How Data Quality Enables Advanced Analytics In Supply Chain Management”](#)
- [“IBM Saves \\$160 Million, Achieves 100% Order Fulfillment With Cognitive Supply Chain”](#)
- [“Importance of Production Scheduling in Managing Supply Chain Disruptions”](#)
- [“Production Planning and Scheduling for Manufacturing”](#)
- [“Unlocking the Invaluable Role of Big Data in Modern Supply Chain Management”](#)

### **Discussion Questions:**

- What are some potential consequences of a lack of data analytics in supply chain management?
- Why is data analytics especially important given the rise in popularity of e-commerce?
- Consider a career you are familiar with, or one that you hope to have someday. What role do you think data analytics plays in that career?
- Similar to highly specialized medical equipment, brainstorm some goods that might cause companies to overspend on their supply chain (e.g., perishable goods, hazardous chemicals, luxury items and vehicles)
- How does data analytics promote trust and transparency across the supply chain?

**Sources:**

- ["35 E-Commerce Statistics of 2024"](#)
- ["5 Key Reasons Why Data Analytics Is Important to Business"](#)
- ["Capacity Utilization in Supply Chain Management: Maximizing Operational Efficiency"](#)
- ["Capital Goods"](#)
- ["Data Analytics"](#)
- ["How Do You Use Data and Analytics to Optimize Your Purchasing Decisions?"](#)
- ["How to Address the Supply-Chain Staffing Crisis"](#)
- ["How to Control Costs by Balancing the Supply Chain"](#)
- ["How to Cut Spending Waste From Healthcare Supply Chains"](#)
- ["Improving Cost Control Challenges in Supply Chain Management"](#)
- ["Supplier Rationalization"](#)
- ["Supply Chain Forecasting: How to Plan for Expected and Unexpected Disruptions"](#)
- ["The Importance of Supply Chain Management in Healthcare"](#)
- ["What Is Data Analysis?"](#)
- ["What Is Spend Control? Rethink Organizational Spending"](#)
- ["What Is Supplier Rationalization?"](#)
- ["What Is Supply Chain Forecasting?"](#)