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Your Competitors' Supply Chains are Changing: How AI Can Transform Your Business

By Taylor Thompson

Spending on artificial intelligence (AI) in business operations worldwide is projected to increase by almost five times from 2019 to 2023.¹ Collectively, businesses across the world will spend an estimated \$10.8 billion on investments in AI in 2023. These investments will make your competitors' supply chains faster, more efficient, and increasingly agile. The question is simple: will you be willing to keep up?

What is AI and Why Should You Care?

While most supply chain professionals have likely heard the term “AI” before, not many are aware of how best to leverage AI to improve their business. Kaplan and Haenlein of ESCP Europe Business School describe AI as “a system’s ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation.”² Put simply, AI leverages computer power to understand large amounts of data and uses it to accomplish certain functions.

If you take a look into the most forward-thinking businesses today, you will find that they use AI to create powerful processes and actionable results with their data. Professionals in supply chain management have more data at their disposal than most, and the smartest ones are using that data to take leaps and bounds ahead of their competitors. While most business managers use data like a physical roadmap—constrained to guess the best way forward using a static, outdated copy of the information they need, AI-empowered managers exploit their data like a GPS—choosing an optimized path and responding quickly to changes in the environment.

How can *you* leverage the data that is available to you to make smarter business decisions faster? Let’s evaluate the ways AI is revolutionizing decision-making in logistics, customer relationship management, and procurement. Further, let’s discuss how you can strategically implement AI across these functions in your supply chain—and the benefits of doing so.

The Power of AI in Supply Chain Management

Innovative supply chain professionals across the globe are already exploiting AI and using their proprietary data to make aggressive changes in their supply chains. Here are some examples of companies that have already created a powerful competitive advantage in their supply chains by harnessing the power of AI.

LOGISTICS

The COVID-19 crisis has shined a light on the currently feeble natures of companies' logistical capabilities. Your ability to get product to your customer when, where, and how they want is more important than ever. In the technology age, your company has more access to data than ever before, and your ability to use that data can transform your supply chain's logistics. In a careful analysis of more than 200 businesses, one study points to a "strong association between supply chain data analytics and supply chain agility," and that high levels of analytics can lead to greater supply chain agility, regardless of your companies' size.³

Some very specific ways that AI has empowered trucking logistics, for example, include the following:

- Optimized delivery routes based on traffic and weather conditions
- Timely arrival alerts to warehouses when a truck nears its destination
- Increased fuel optimization
- Improved overall vehicle utilization⁴

AI also enables improved inventory management and forecasting. Consider the case of the retail mammoth, Walmart. In 2019, Walmart created an "Intelligent Retail Lab" out of its Levittown, New York store. This store is equipped with cameras and sensors that can detect inventory patterns for products on shelves. The store's AI system provides its employees with real-time information on sales demand, telling them when a shelf needs replenishment, and by how much. With advanced technology like this, Walmart can eliminate inefficient employee store-walks and improve demand forecasting.⁵

CUSTOMER RELATIONSHIP MANAGEMENT

In recent years, a few businesses have risen to the top in their ability to cater to each customer individually. Google, Netflix, and Amazon all stand out because of their ability to predict precisely what you want to search, watch, or buy based on your past interactions with them. How have these companies been able to go so much further in meeting individuals' wants and needs? The answer is AI.

Since 1998, Amazon's recommendation system has employed the use of increasingly advanced AI algorithms to suggest additional items for purchase.⁶ As the AI methods improve, so does Amazon's ability to individualize the customer shopping experience, which has been an important factor in its growth to absorb 44% of the entire U.S. e-commerce market.⁷

PROCUREMENT

Don't be deceived. AI does not eliminate the need for human relationships in your supply chain, *especially* in procurement. However, you can use AI to leverage your purchasing and sales data, empowering your buyers to make smarter decisions and making them better prepared for tough

negotiations. Systems already exist that allow purchasing professionals to “proactively improve compliance, manage spend, identify fraud and abuse, and improve the overall buying process.”⁸

Perhaps most importantly, specific AI methods can help your purchasing managers when it comes to selecting the best supplier. Business-focused AI researchers have described this process as “decision-making on the basis of multiple attributes.”⁹ Once an optimal set of suppliers is chosen, your buyers can use software like Oracle’s cloud-based applications that enable them to best balance buyer and supplier priorities and risks. In applying AI to purchasing, your buyers will be able to “build trusted relationships that drive better engagement with suppliers.”¹⁰

Implement AI Strategically

In order to realize your AI-enhanced supply chain’s full potential, you will need to focus the use of AI to enhance your established company strategy. Consider Porter’s famous product/supply chain matrix as shown in Figure 1. Companies with functional products should have efficient, cost-effective supply chains. Companies with innovative products, on the other hand, should have responsive supply chains.

		Product/Supply Chain Match	
		Functional Products	Innovative Products
Supply Chain	Efficient	MATCH	MISMATCH
	Responsive	MISMATCH	MATCH

Figure 1: Product/Supply Chain Match Matrix. Adapted from Fisher.¹¹

Use AI to enhance either of these two supply chain strategies: if your company’s product is functional, use AI to find opportunities for increased efficiency and if your company pursues differentiation with an innovative product, leverage AI to make your supply chain more responsive and agile. Both product strategies can be augmented with a deliberate implementation of AI in your supply chain.

Sanders and Swink also provide a helpful framework that you can employ when considering the implementation of AI in your supply chain (see Figure 2). Ultimately, technology in a supply chain should create insight and automation—and AI technologies are powerfully positioned to do both. AI automates both mundane and complex processes and creates robust insights out of the data it takes in. In this way, you can use AI to create both efficiency (as shown in the southeast quadrant of the matrix) or agility and customization (as shown in the northeast quadrant in

Figure 2) to best suit your strategic goals. When implementing AI to your supply chain, focus on how your supply chain complements your company's strategic goals and how AI can strengthen strategic alignment.

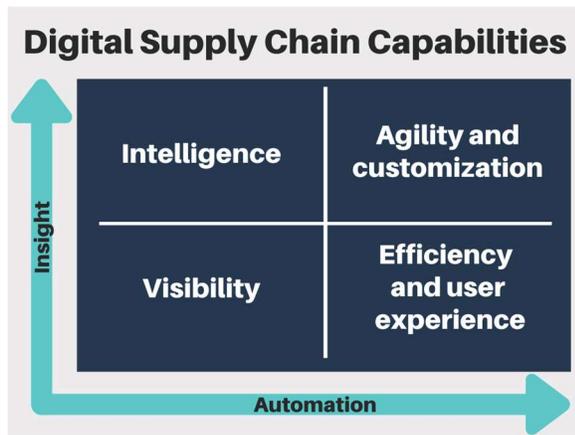


Figure 2: Digital Supply Chain Capabilities Matrix. Adapted from Sanders and Swink.¹²

Reap the Rewards of AI

You might still be wondering, "If my business has made it this far without an AI-enhanced supply chain, why change?" A recent report from Accenture Industry X.0 explains that the businesses that are best at collaborating to achieve digital innovation are earning "four times the revenue growth of their industry peers."¹³ As AI becomes a larger component in the world's best supply chains, those businesses that do not invest in these technologies will simply not keep up.

As supply chains and operations become a core provider of competitive advantage to modern-day firms, it's more important than ever to take advantage of the big data that is at your fingertips. Sanders and Swink put it best: "the future will belong to firms who develop digitized, connected, intelligent, adaptive supply chains, following well thought out and flexible roadmaps for digital transformation."¹⁴

Begin by targeting the supply chain function that offers a strategically aligned core competency to your business. As you carefully implement AI, you and your colleagues will be empowered to make smarter business decisions that are directly targeted to solve the specific business problems you face.

¹ HFS Research. "Robotic/intelligent process automation (RPA/IPA) and artificial intelligence (AI) automation spending worldwide from 2016 to 2023, by segment (in billion U.S. dollars)." Chart. January 23, 2020. Statista.

² Kaplan, Andreas, and Michael Haenlein. Siri, Siri, in My Hand: Who's the Fairest in the Land? on the Interpretations, Illustrations, and Implications of Artificial Intelligence. 2019.

³ Shamout, M. D. (2020). Supply chain data analytics and supply chain agility: A fuzzy sets (fsQCA) approach. International Journal of Organizational Analysis, 28(5), 1055-1067. doi:10.1108/ijoa-05-2019-1759

⁴ Sharma, Sumit. "How Artificial Intelligence is Transforming Logistics Sector." Financial Express, Nov 15, 2019.

⁵ Nishimura, Kate. "Walmart Brings AI's Online Efficiency to a New Store of the Future." *Sourcing Journal* (Online) (Apr 26, 2019).

⁶ McCracken, Harry. "The Great AI War of 2018." *Fast Company*, no. 220 (November 2017): 64–73.

⁷ Duggan, Wayne. "Latest E-Commerce Market Share Numbers Highlight Amazon's Dominance." *Benzinga Newswires*, Feb 04, 2020.

⁸ "Suplari Launches AI-Driven Purchasing Intelligence to Optimize Enterprise Procurement Processes: Suplari Purchasing Intelligence Enables Financial and Procurement Professionals to Proactively Improve Process, Manage Spend, Drive Compliance, and Identify Fraud and Abuse." *PR Newswire*, Nov 14, 2018.

⁹ Soni, G., Jain, V., Chan, F. T., Niu, B., & Prakash, S. (2019). Swarm intelligence approaches in supply chain management: Potentials, challenges and future research directions. *Supply Chain Management: An International Journal*, 24(1), 107-123. doi:10.1108/scm-02-2018-0070

¹⁰ "United States: Oracle Infuses its Cloud Applications with Artificial Intelligence - Artificial Intelligence Makes the World's Broadest, most Innovative, and Fastest-Growing Cloud Applications Portfolio Even Smarter." *Asia News Monitor*, Oct 04, 2017.

¹¹ Fisher, Marshall L. "What Is the Right Supply Chain for Your Product?" *Harvard Business Review* 75, no. 2 (March 1997): 105–16.

¹² Sanders, Nada, and Morgan Swink. "Digital Supply Chain Transformation: Visualizing the Possibilities." *Logistics Management* 59, no. 3 (March 2020): 42–53.

¹³ "Supply Chain Startup: Digitization done Right: Five Lessons in Cross-Function Collaboration." *News Bites - Private Companies*, Jul 10, 2020.

¹⁴ Sanders, Nada, and Morgan Swink. "Digital Supply Chain Transformation: Visualizing the Possibilities." *Logistics Management* 59, no. 3 (March 2020): 42–53.