

# THE DIGITAL TRANSFORMATION OF THE GLOBAL SUPPLY CHAIN IS UNDERWAY

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Amazon has disrupted the retail marketplace and triggered wide-ranging changes to the supply chain for both consumer and industrial e-commerce. Using emerging technologies such as artificial intelligence, advanced analytics and machine learning, Amazon is setting the tone and revolutionizing how supply chains work.

Amazon offers 480 million consumer and industrial products on its website.<sup>1</sup> Facilitating this astounding array is a complex supply chain involving multiple partners and offering visibility throughout the process to all stakeholders.

The impact of the “Amazon effect” on the supply chain is being felt across all industries. Supply chain executives realize Amazon has triggered a complete transformation of the discipline, not simply a matter of tweaking and adding technology.

The success of Amazon’s operations has created higher expectations across the board for transparency and speed on every purchase transaction. Customers want to be able to place orders at any time of the day, track the movement of their purchases and get delivery in just one day or even a few hours. These higher expectations are not limited to consumer purchases; Amazon has reset supply chain performance standards for business-to-business transactions as well.

## WHAT’S BEHIND THE AMAZON EFFECT?

Amazon uses machine learning, advanced analytics, order management, network-based information platforms and sophisticated freight management and delivery systems to speed purchases to its customers.

Amazon’s digital supply chain begins with the customer, either through Amazon’s website or connected through its Dash Replenishment Service. Dash uses smart internet of things (IoT) devices on household appliances to automatically reorder staple items when supplies run low.<sup>2</sup>

Amazon is known for its fast delivery, and this requires continuous fulfillment scheduling rather than batching orders at the end of a day. Orders are processed instantaneously and warehouse picks are made immediately, then sorted to trucks from partner carriers such as UPS, FedEx and the U.S. Postal Service.<sup>3</sup>

Amazon, as well as UPS and FedEx, have built fully automated fulfillment centers.<sup>4</sup> Some warehouses and fulfillment centers team human workers with collaborative robots to pick packages and sort them for trucking to partner carriers and Amazon’s own delivery fleet for final destination delivery.

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## A SUPPLY CHAIN REVOLUTION

Digitization and automation of the supply chain will improve operating performance, once technology gaps and transitional issues are resolved. A recent McKinsey & Company study found companies that aggressively digitize their supply chain expect to increase annual revenue growth by 2.3%.<sup>5</sup>

While companies reassess their current supply chain and begin to digitize and adopt new technology, transformation has been a bit slow. McKinsey noted only 43% of companies have digitized their supply chain.<sup>6</sup>

However, innovation seems to be gaining momentum. A recent study by Supply Management found 72% of companies expect to rely on robotic process automation (RPA) in their supply chain by 2019.

RPA will help companies raise productivity, improve compliance, shorten transaction times and save money.<sup>7</sup>

The next big change will be driverless delivery cars and trucks. Amazon, Google, Uber and Facebook have launched autonomous vehicle and truck pilot programs, with the aim of making most cross-country deliveries with driverless vehicles in the next few years.<sup>8</sup>

**To discuss these topics in more detail, please contact your PNC Relationship Manager.**

1 "Think the Amazon Effect is Just a Retail Problem? Think Again," blog post by Greg Kefer, GT Nexus blog, Aug. 29, 2017. Available at: <http://www.gtnexus.com/resources/blog-posts/amazon-effect-supply-chain-technology>

2 "Amazon Dash Replenishment Program Continues to Grow, Adding New Device Manufacturers and Auto-Replacement Products," Amazon press release, Jan. 10, 2018. Available at: <http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-newsArticle&ID=2325984>

3 "The Amazon Effect and the Global Supply Chain," by Rosemary Coates, Supply Chain Management Review, May 30, 2017. Available at: [http://www.scmr.com/article/the\\_amazon\\_effect\\_and\\_the\\_global\\_supply\\_chain](http://www.scmr.com/article/the_amazon_effect_and_the_global_supply_chain)

4 "Report: 72% of companies will automate processes by 2019," by Jennifer McKeivitt, Supply Chain Dive blog, May 11, 2017. Available at: <https://www.supplychaindive.com/news/automation-process-procurement-time-efficiency/442448/>

5 "Digital transformation: Raising supply-chain performance to new levels," by Enis Gezgin, Xin Huang, Prakash Samal and Ildefonso Silva, McKinsey & Company, November 2017. Available at: <https://www.mckinsey.com/business-functions/operations/our-insights/digital-transformation-raising-supply-chain-performance-to-new-levels>

6 "Digital transformation: Raising supply-chain performance to new levels," by Enis Gezgin, Xin Huang, Prakash Samal and Ildefonso Silva, McKinsey & Company, November 2017. Available at: <https://www.mckinsey.com/business-functions/operations/our-insights/digital-transformation-raising-supply-chain-performance-to-new-levels>

7 "Report: 72% of companies will automate processes by 2019," by Jennifer McKeivitt, Supply Chain Dive blog, May 11, 2017. Available at: <https://www.supplychaindive.com/news/automation-process-procurement-time-efficiency/442448/>

8 "Emerging Trends in Automation: What it Means to Supply Chains," by Adam Robinson, Cerasis blog, May 8, 2017. Available at: <http://cerasis.com/2017/05/08/trends-in-automation/>

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