HOW
E-COMMERCE

IS CHANGING
SUPPLY CHAINS

A WHITE PAPER FROM FREIGHTWAVES
IN PARTNERSHIP WITH RYDER SYSTEM, INC

FREIGHTWAVES **Ryder**
Ever better.

NOVEMBER 2020

EXECUTIVE SUMMARY

The COVID-19 pandemic has proved to be a "once in a hundred year flood" for the e-commerce sector, only in a good way for e-commerce demand. E-commerce penetration increased by as much in the first eight weeks of the pandemic as it did in the prior ten years, from 11% at the end of 2019 to above 30% as of the second quarter of 2020. While e-commerce was already on a strong secular growth path, even those at the forefront of the growth curve (such as Amazon) found themselves swamped from a logistical standpoint in terms of being able to seize on all the newfound incremental demand and fulfill the exponential growth in orders.

If even the biggest and the best are struggling to deal with the "new normal" for e-commerce demand (and we think many of the market share gains of e-commerce and online ordering habits of consumers are permanent in nature), then those retailers that are new, smaller or that were behind in terms of transitioning their storefronts and supply chains online can all stand to benefit from an e-commerce partner that complements their strengths. This is where Ryder fits in with its third-party e-commerce fulfillment operations and warehousing.

Ryder offers a full suite of products to get a retailer's e-commerce operations up and running, streamlined or flexed up to scale. The best way to compete with large e-commerce players as a smaller retailer is to sell a product that is unique and differentiated, while outsourcing logistics and non-core competencies to third parties.

E-commerce is a game of scale and smaller players that lack it need to be able to compete on a level playing field, which is where a third-party logistics solution can step in. The benefits of matching scale come in at every step of the process. For example, small businesses today can be started up and be selling online within a matter of hours by outsourcing their website development, payment processing and logistics to third parties.

This allows a smaller business to focus on what they do best and not overextend themselves in areas that are outside their core strengths. Regardless of merchant size, customer expectations for delivery and service are the same high standard that customers have grown to expect from e-commerce leaders, so it is not possible for retailers to try to cut corners and expect to be able to compete.

COVID-19 has exponentially increased the incentive for many companies to outsource their logistics operations, so that they are able to capture and serve the incremental demand today before they have the ability (or the capital necessary) to bulk up their infrastructure.

HOW E-COMMERCE HAS CHANGED SUPPLY CHAINS AND THE RETAIL EXPERIENCE

E-commerce in the U.S. was already on a tremendous growth path prior to COVID-19, growing at about a 15% compound annual growth rate for the last decade plus.

However, COVID-19 accelerated e-commerce growth exponentially, bringing the overall penetration of online retail in the U.S. up from just 11% as of the end of 2019 to nearly 30% in the second quarter of 2020.

Much like the incremental growth seen in cloud computing as work from home takes hold in the U.S., e-commerce seems to be on a similar growth path to cloud computing, which in the words of Microsoft CEO Satya Nadella has seen "two years' worth of digital acceleration occur in two months." It would seem that many of the new online shopping habits developed by American consumers will be permanent and have long-lasting implications — just look at the massive acceleration in online grocery shopping.

For transportation and supply chains, the acceleration and increasing penetration of e-commerce has profound implications, both in terms of how products are routed and shipped as well as the buildout of countless warehouses, distribution centers and fulfillment centers to serve this demand.

Growth in final mile has exploded in conjunction with e-commerce and the amount of parcels flowing through the UPS, FedEx and Amazon networks show no signs of slowing as we head into the holiday season. E-commerce in its early days in the U.S. was dominated by eBay and Amazon, but this dynamic could be changing with other very large big box retailers such as Walmart, Target and Costco seeing accelerating e-commerce growth and growing market shares. In this report, we will examine and discuss all of the major trends and supply chain implications of e-commerce's rise in the U.S.

There are three primary statistics to remember with e-commerce in the U.S.: Total e-commerce sales were about $600 billion in 2019; e-commerce penetration was just 11% of total retail sales (or just 16% after removing purchases inherently suited for brick-and-mortar stores such as fuel, etc.) as of the end of 2019; and e-commerce is forecast to grow at a double-digit CAGR for many years to come.

HOW TO COMPETE IN E-COMMERCE AS A SMALLER PLAYER

The best way to compete with large e-commerce players as a smaller retailer is to sell a product that is unique and differentiated, and outsource logistics and non-core competencies to third parties.

A good example of this might be a small business using Shopify for website development and back-end support, Square for payment processing, and Ryder for third-party logistics services.

E-commerce is a game of scale and smaller players that lack it need to be able to compete on a level playing field, which is where a third-party logistics solution can step in. The benefits of matching scale come in at every step of the process. For example, small businesses today can be started up and be selling online within a matter of hours by outsourcing their website development, payment processing and logistics to third parties.

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e-commerce leaders, so it is not possible for retailers to try to cut corners and expect to be able to compete.

COVID-19 has exponentially increased the incentive for many companies to outsource their logistics operations, so that they are able to capture and serve the incremental demand today before they have the ability (or the capital necessary) to bulk up their infrastructure.

COVID-19 has simultaneously caused countless U.S. companies to be met with an enormous, rapid and unexpected influx of e-commerce demand. At the same time, sales at most retailers' brick-and-mortar store locations are plummeting (though recovering as states reopen). This mix shift requires retailers to have an exceptional and flexible supply chain in place to be able to smoothly manage this transition.

For many companies that have found themselves in this position today with COVID-19, they not only lack the necessary e-commerce fulfillment infrastructure to support the additional growth (because the surge in demand was so unpredictable and unplanned), but even if they did, their margins would likely severely compress trying to fulfill all the additional orders with no outside assistance.

Therefore, not only does outsourcing provide access to expertise that your company does not have, but it is a capital-light avenue for growing e-commerce sales while maintaining (or even growing) margins. Companies like Ryder can be very beneficial in this regard as they allow a pool of individual retailers to leverage shared costs in a variable manner as opposed to having to make huge fixed outlays.

It is not just the fulfillment network and design that is important. Inventory management also plays a vital role in e-commerce success. "Nimble inventory management is critical," as Jeff Abeson, VP E-Commerce at Ryder, says, because not having inventory in the right place at the right time or not having the technology to replenish it can result in missed sales or disappointed customers.

When you have a massive sales mix shift from in-store to online, orders switch to individual customer orders compared to replenishing pallets at a retail store, which means "the problem just became exponentially more challenging from a demand planning perspective" according to Abeson. Again, turning to a company like Ryder that has deep experience and knowledge of building out e-commerce networks makes sense in our view.
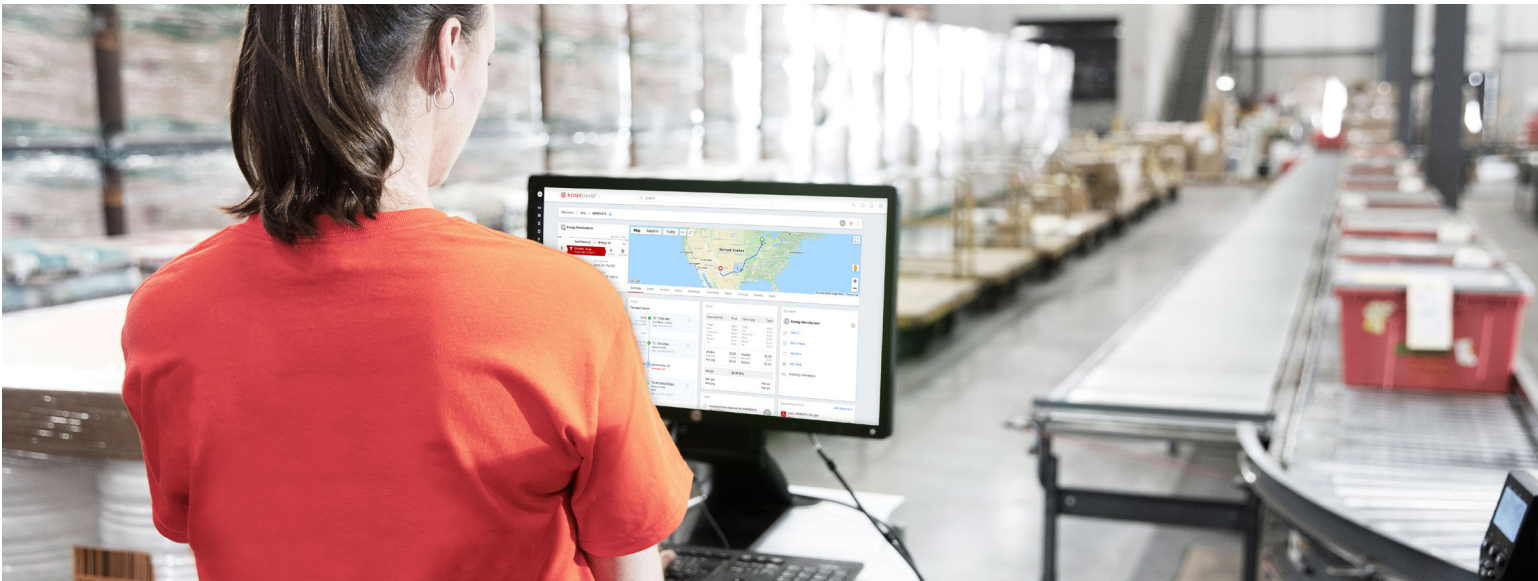
THE BENEFITS OF USING RYDER E-COMMERCE FULFILLMENT TO GROW FASTER, BECOME A MORE EFFICIENT RETAILER AND SATISFY CUSTOMERS

Ryder allows a business to fulfill and deliver all its orders within two days nationwide, as well as gain complete visibility into its inventory and warehouse operations.

RYDER E-COMMERCE SOLUTIONS

99%
on-time order fulfillment

99%
pick and order accuracy

99%
of United States reached within two days

100%
real-time visibility of orders from dock door to consumer

Ryder provides the warehouse and offers technology for inventory monitoring and tracking. Ryder's warehouse management systems (WMS) also seamlessly integrate with most third-party e-commerce solutions, making it easy for a retailer to focus on running their business and what they do best, while still leveraging the best third-party solutions in the market.

6

Ryder offers a small or midsize retailer similar scale, technology and execution compared to leading, much larger e-commerce players at a fraction of the cost that it would take to build out such a network organically. Ryder uses its own network of trusted carriers that ensures that a retailer can reach 99% of their customers in the U.S. within two days with 99% on-time order fulfillment and 99% accuracy. The latter statistics are very difficult to achieve from scratch without a long and expensive learning curve.

Best of all, Ryder has already done the legwork in terms of the strategic placement of fulfillment centers for your company. This cuts down on transportation costs and comes with an agnostic network of qualified third-party transportation providers that have already been vetted to save you both time and capital.

Ryder can also optimize your supply chain by figuring out optimal placement of inventory, whether that means more inventory in fewer places to save on cost or locating inventory closer to customers to enhance speed of delivery. Jeff Abeson says that, ideally, a business wants as much inventory as consolidated and as close to the customer as possible because that will be financially beneficial. Optimizing your supply chain and figuring out the answers to all these questions is not easy, but is exactly what Ryder specializes in.

Outsourcing your e-commerce fulfillment to a company like Ryder is many companies' best option during COVID-19 because, according to Abeson, many customers are experiencing demand that "is 10 to 12 times a typical peak season for them." Any retailer lacking excess capacity or that has not been building out their e-commerce fulfillment infrastructure for years is likely going to have issues filling this demand unless they can outsource the logistics, inventory and warehouse management.

One final example of Ryder's value-added expertise is not simply on outbound logistics (i.e., efficiently transporting and delivering the customer order from the fulfillment center or DC to the end customer), but also optimizing a retailer's inbound logistics network. For example, Ryder can assess all potential opportunities where it might make sense or offer meaningful cost savings to consolidate more inbound parcels into LTL or more inbound LTL shipments into full truckload. There are countless other examples where Ryder can help customers gain greater efficiencies in their e-commerce supply chains.

Jeff Abeson sums up the overall benefits of outsourcing e-commerce operations nicely when he says, "Outsourcing really gives a company that does not have a core competency in e-commerce the luxury of being able to put a much more significant revenue stream into the hands of folks that understand how to manage it, using the right technology and visibility and the right leverage points within shared facilities."
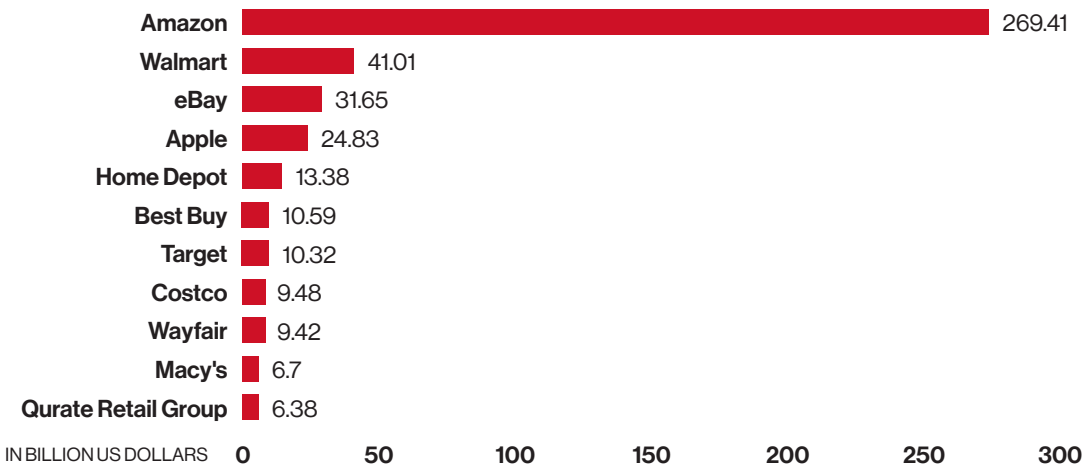
THE RISE OF AMAZON AND THE RIPPLE EFFECT FROM FREE TWO-DAY (AND NOW ONE-DAY) DELIVERY

Amazon held its initial public offering in 1997 as a small online bookseller. In the last 23 years, Amazon has grown its revenue to $370 billion in 2020 (using Wall Street consensus estimates) and extended its product offerings to nearly every consumer industry vertical imaginable.

Amazon currently accounts for just 3% of total U.S. retail spending but holds about a 40% market share of total e-commerce sales in the U.S.

LEADING U.S. RETAILERS' E-COMMERCE SALES IN DESCENDING ORDER (2020 ESTIMATES)

Retailer	Sales
Amazon	269.41
Walmart	41.01
eBay	31.65
Apple	24.83
Home Depot	13.38
Best Buy	10.59
Target	10.32
Costco	9.48
Wayfair	9.42
Macy's	6.7
Qurate Retail Group	6.38

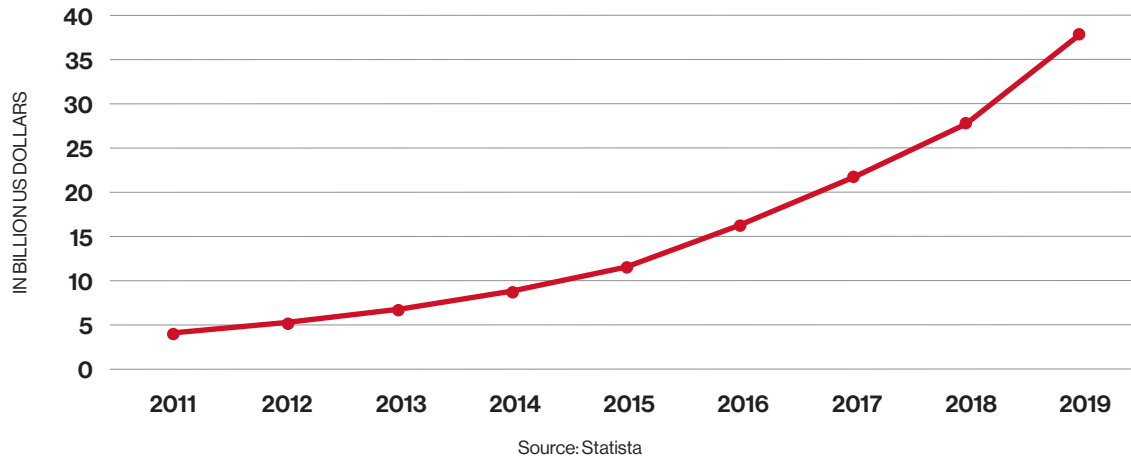IN BILLION US DOLLARS   0   50   100   150   200   250   300

Source: Statista

Historically, and still today even though others are catching up, Amazon has been at the forefront of e-commerce innovation and development. Competitors have had to scramble to keep up. For example, Amazon's shipping and fulfillment costs were $37.9 billion in 2019 (up 37% from $27.7 billion in 2018). Amazon is earning a return on investment (ROI) in the form of increasing Prime customer memberships, which now total more than 110 million in the U.S. and 150 million globally.
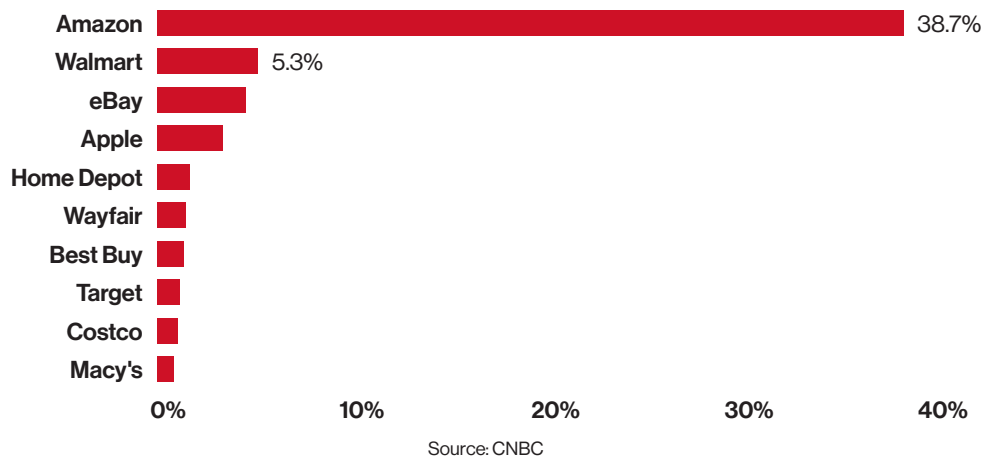
AMAZON SHIPPING AND FULFILLMENT COSTS (2011-19)

IN BILLION US DOLLARS

40
35
30
25
20
15
10
5
0

2011 2012 2013 2014 2015 2016 2017 2018 2019

Source: Statista

While competitors are rapidly narrowing the gap with Amazon and even growing substantially faster (though admittedly off of much smaller bases), the gap with Amazon remains incredibly wide as Walmart, the No. 2 U.S. e-commerce player, still only holds about 5% market share (or about one-eighth of Amazon).

U.S. RETAIL E-COMMERCE MARKET SHARE (2020)

Amazon — 38.7%
Walmart — 5.3%
eBay
Apple
Home Depot
Wayfair
Best Buy
Target
Costco
Macy's

0%   10%   20%   30%   40%

Source: CNBC

Therefore, in the scramble to keep up with Amazon, retailers are spending ever-rising sums on transportation, supply chains and technology, which is creating margin pressure as sales increasingly transition away from their brick-and-mortar locations. E-commerce is a game of scale, and scale must be achieved for a retailer's e-commerce margins to reach a tipping point and inflect upward. Finally, many retailers are following Amazon's lead with loyalty programs that offer unlimited free, fast shipping (after paying an annual fee). Prime is likely attracting similar copycat, competitive offerings because it has a stunning 95% retention rate after two years.

AMAZON PRIME RETENTION RATE BY CUSTOMER COHORT

Source: CNBC
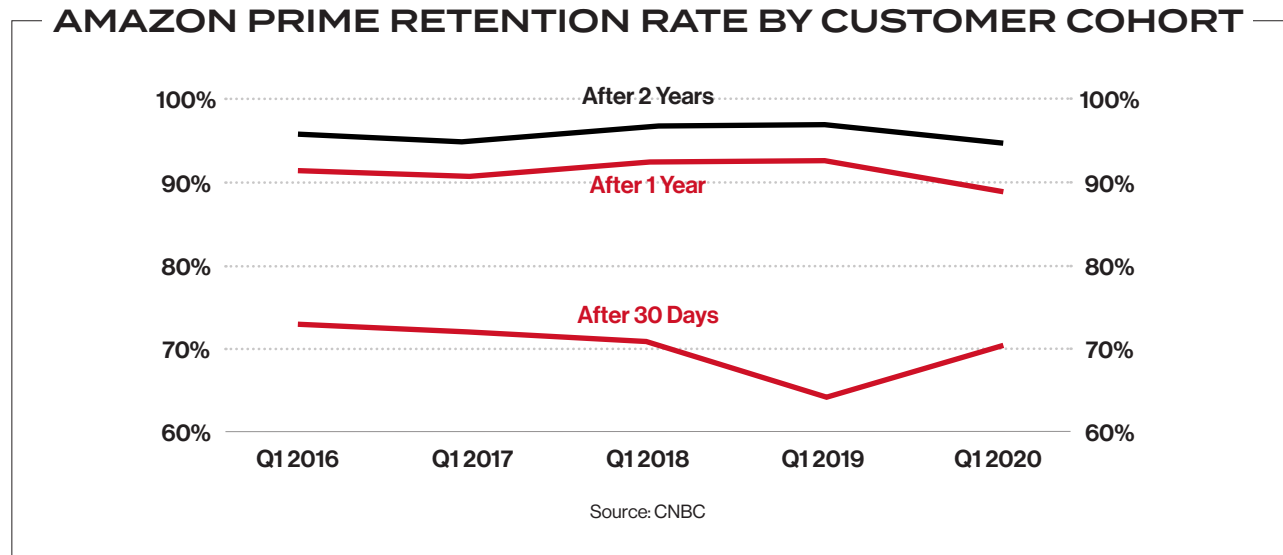
THE BIG ARE GETTING BETTER BUT COMPANIES LIKE SHOPIFY (AND EVEN AMAZON) ARE HELPING THE LITTLE GUYS COMPETE

The big are getting bigger in terms of U.S. retailers. This was well demonstrated in the blowout fiscal second-quarter earnings reports of major retailers in the U.S. (e.g., Amazon, Walmart, Target, Lowe's, The Home Depot). Part of this is a result of COVID-19 and many large, publicly traded retailers being deemed essential as opposed to many small and midsize businesses (SMBs) being forced to shut down.
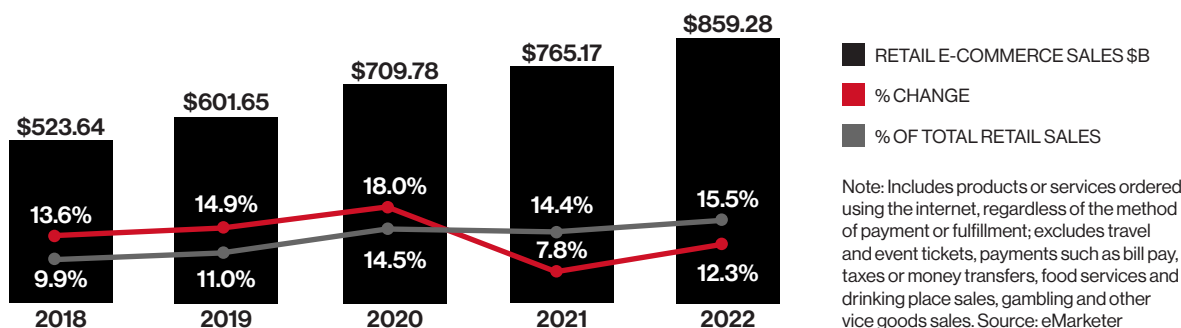
Using Statista's forecast for the top 10 U.S. retailers' e-commerce sales in 2020 suggests that the top 10 have a combined e-commerce market share of approximately 60% ($427 billion in e-commerce sales divided by $710 billion in U.S. e-commerce sales in 2020 per eMarketer). This market share concentration swamps the top 10 U.S. retailers' share of total retail sales nearly three times over, which we estimate to be 22% (top 10 U.S. retailers' total sales of $1.2 trillion per the National Retail Federation divided by $5.5 trillion in total U.S. retail sales in 2019).

RETAIL E-COMMERCE MARKET SHARE OF THE TOP 10 PLAYERS IN THE U.S. (2020 ESTIMATES)

	Company	Sales ($B)	Mkt Share		Company	Sales ($B)	Mkt Share	
1)	Amazon	269.41	38.0%	6)	Best Buy	10.59	1.5%	Total US E-Commerce Sales (2020e): $709.78
2)	Walmart	41.01	5.8%	7)	Target	10.32	1.5%	
3)	eBay	31.65	4.5%	8)	Costco	9.48	1.3%	
4)	Apple	24.83	3.5%	9)	Wayfair	9.42	1.3%	Top 10 Penetration: 60.1%
5)	Home Depot	13.38	1.9%	10)	Macy's	6.70	0.9%	
					Total	426.79	60.1%	

Source: Statista, eMarketer, FreightWaves

RETAIL E-COMMERCE SALES IN THE U.S. (2018-2022)

■	RETAIL E-COMMERCE SALES $B
■	% CHANGE
■	% OF TOTAL RETAIL SALES

Note: Includes products or services ordered using the internet, regardless of the method of payment or fulfillment; excludes travel and event tickets, payments such as bill pay, taxes or money transfers, food services and drinking place sales, gambling and other vice goods sales. Source: eMarketer

Chart values:
- 2018: $523.64, 13.6%, 9.9%
- 2019: $601.65, 14.9%, 11.0%
- 2020: $709.78, 18.0%, 14.5%
- 2021: $765.17, 14.4%, 7.8%
- 2022: $859.28, 15.5%, 12.3%

But even when measured by total retail sales (and not just e-commerce), the market shares of the top U.S. retailers are growing each year, so the big are getting bigger in both e-commerce and brick-and-mortar retail sales.

All is not lost though. Despite being decimated in many respects by COVID-19, small businesses are being aided in their online efforts by Shopify, third-party selling platforms such as Amazon (which adds additional risks) and fintech players such as Square. All it really requires to sell online today is a product or service (or even an idea) and an entrepreneur can be up and running almost immediately due to the proliferation of e-commerce vendors that specialize in all the necessary aspects of selling online.

In terms of the big getting bigger, Target grew its e-commerce business 195% in the just-announced quarter. That is not a typo. E-commerce now stands at 17% of sales for Target, up from just 3% in 2016 when CEO Brian Cornell took over.

TOP 5 RETAILERS IN THE U.S. (2019)

|	Company	Sales ($B)	Mkt Share			Company	Sales ($B)	Mkt Share
1)	Walmart	$391	7.2%		4)	Home Depot	$111	2.0%
2)	Amazon	$171	3.1%		5)	Target	$80	1.5%
3)	Costco	$130	2.4%		6)	Lowe's	$72	1.3%
						Total		17.5%

Total US Retail Sales: **$5,460**

*US-only sales for major public retailers

Walmart is the largest retailer in the U.S. and the No. 2 e-commerce player with 5.8% market share. Walmart is catching up with Amazon and taking market share as can be seen via Walmart growing its e-commerce revenue by 97% year-over-year in the second quarter. Walmart's e-commerce growth could even accelerate in our view and become more sticky over time once the company finally launches its Walmart+ (its equivalent of Amazon Prime) subscription service.

However, Walmart still lacks one thing that Amazon has — sheer volume of inventory. Walmart has 50,000 vendors selling online compared to Amazon at 8.7 million. The former number may be higher now after Walmart's deal with Shopify. Shopify is often referred to as "the king of mom-and-pop retailers" and has more than 1.4 million small merchants selling on its platform. These SMBs now have a chance to sell their wares on walmart.com. Walmart says it is adding 1,200 of Shopify's top merchants to its website in 2020. This deal is likely an attempt to pull away third-party sellers from Amazon at a time when there is a lot of built-up tension between the two groups. Amazon is often accused of stealing customer data and using it to compete with its third-party vendors.
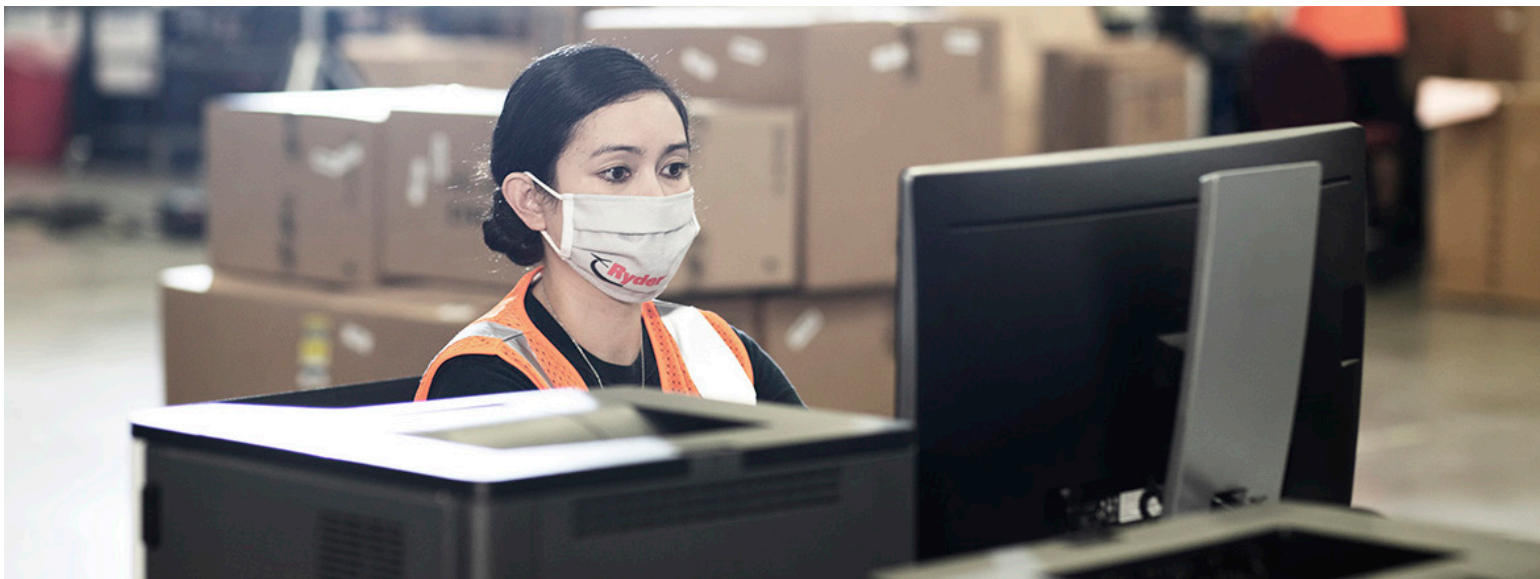
COVID-19 HAS DRAMATICALLY ACCELERATED E-COMMERCE GROWTH, CREATING PERMANENT CHANGES IN CONSUMER BEHAVIOR
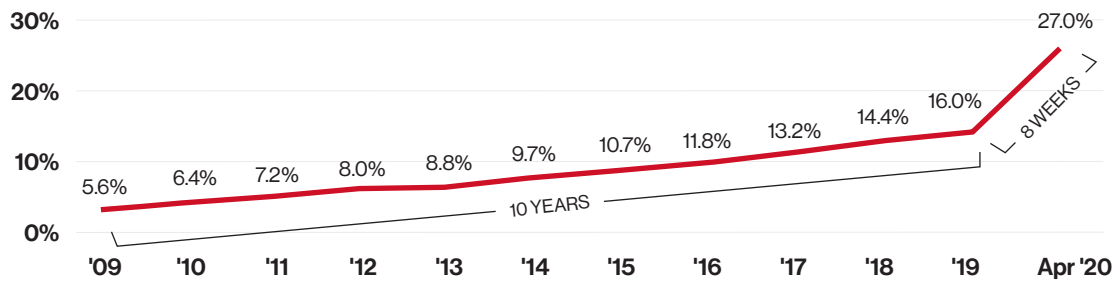
Categories like grocery and cars, not traditional e-commerce verticals, have thrived in the pandemic, leading many to question whether the gains made are permanent in nature given consumer habits, once in place, are difficult to change. As Jeff Abeson put it, "Right now we are dealing with customers that have growth of 10 to 12 times what a typical peak would look like for them. There has been an unprecedented change and we have seen retailers, distributors and manufacturers do some really creative things to support this level of e-commerce growth and quickly adapt to the new demand."

With the acceleration of e-commerce, both start-ups and seasoned retailers, are turning to third party providers like Ryder for supply chain expertise. Ryder's e-commerce fulfillment solutions provide companies the people, space, and systems to help companies develop e-commerce capabilities.

E-commerce is benefiting from the twin engines of convenience, as many brick-and-mortar retail stores were deemed "nonessential" and forced to close early on in the pandemic, and an overall mix shift in consumer spending toward goods and away from services such as restaurants, bars, entertainment, travel and leisure.

E-commerce penetration increased as much in the first eight weeks of the coronavirus spread in the U.S. (11%) that it previously took 10 years to achieve. The chart below powerfully illustrates this fact. We would note that this chart accounts for e-commerce spending in the U.S. excluding categories that are not well-suited for online (autos, lumber, gasoline, etc.) — hence the 16% penetration at the end of 2019 instead of 11%, which is the actual, accurate figure as a percentage of total retail sales in the U.S.

U.S. E-COMMERCE PENETRATION (2009 - APRIL 2020)

30%

27.0%

20%

5.6%   6.4%   7.2%   8.0%   8.8%   9.7%   10.7%   11.8%   13.2%   14.4%   16.0%

10 YEARS

8 WEEKS

'09   '10   '11   '12   '13   '14   '15   '16   '17   '18   '19   Apr '20

Source: Bank of America, US Department of Commerce, ShawSpring Research

U.S. E-COMMERCE SALES GROWTH AND PENETRATION SINCE THE START OF THE COVID-19 PANDEMIC

Daily Retail Spending Online (Card Not Present) vs. Brick and Mortar, Based on BAC Aggregated Card Data (5YoY)

Total retail B&M
Total retail online
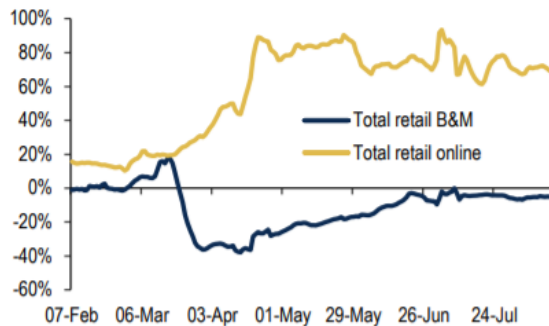
Source: BAC Internal Data

Daily Retail Spending Online (Card Not Present) as a Share of Total Card Spending, Based on BAC Aggregated Card Data (% of 7-Day Moving Average)

Source: BAC Internal Data. Total card spending includes total BAC card activity which captures retail sales + services which are paid with cards. Does not include ACH payments.

Abeson goes on to say that, while he does not view the current exponential rate of e-commerce growth to be sustainable, he does expect most of e-commerce's market share gains to be permanent in nature and that online retail growth will decelerate but only back to the point where it is growing at a rate of about 15% per annum (as it has historically for the last decade or so).

PRIMARY EFFECTS ON SUPPLY CHAINS FROM E-COMMERCE GROWTH

In the pre-e-commerce days, a product's journey was essentially from the manufacturer or supplier to a retailer or to a wholesaler's distribution center (DC) and then on to the retailer's store. E-commerce has blurred the lines.

Today, when a retailer receives an online order, it can be fulfilled from a DC and shipped directly to the consumer; it can be fulfilled out of the store and shipped to the consumer; or it can be picked and packed at the store for pickup by the customer. Regardless, e-commerce requires sophisticated inventory management that ensures the inventory is always available, in the right place and ideally as close as possible to the end customer to minimize shipping costs. Alternatively, inventory can be aggregated and transported in bulk. But the end goals for retailers and shippers are always the same — reduced inventory and shipping costs and fast, on-time and accurate deliveries.

On the latter point, the recently announced inflation in shipping costs (fees charged) from final-mile vendors such as UPS and the U.S. Postal Service will pose a problem for retailers and they will have to find a way to cut other supply chain costs while absorbing the price hikes and without passing the additional costs along to consumers.

One obvious outgrowth of the e-commerce movement is simply many more warehouses, more DCs, more parcels, more humans (and robots) employed in this sector, more delivery trucks/vans and more final-mile transportation and infrastructure. Most retailers have seen increasing nodes in their supply chains as a result too, but that is not always the case.

Retailers are opting for different e-commerce supply chain strategies that fit them best as a one-size-fits-all approach does not make sense for everyone. As Abeson at Ryder notes, "There is always a balance between what do you want and what are you willing to pay for," meaning that same-day or next-day rapid-delivery windows are always possible but a retailer will have to pay for it.

For a retailer, one question that the growth of e-commerce has posed is whether to consolidate products and ship from large DCs, or conversely, to use stores as mini DCs to increase speed, cut down on cost and make efficient use of excess square footage and, oftentimes, existing staff. Plus, it reduces real estate and utility costs for retailers. Most retailers are using a hybrid approach combining both DCs, fulfillment centers and stores to fulfill their online orders. If we were to generalize, there are definitely significant costs, productivity

and transportation savings to be had by consolidating as much product as possible in optimally located DCs, but again there is nuance and strategies will vary.

Target is using a different approach from many other retailers, going all in on using its own stores as a weapon and as fulfillment centers. Initially, many were skeptical of this approach, but so far it is playing out amazingly well for Target as can be seen by its 195% year-over-year e-commerce growth in the most recently reported quarter. Target is fulfilling more than 80% of its digital orders from stores and, because 75% of Americans live within 10 miles of a Target, half of all orders with free, two-day shipping actually arrive in one day, which increases customer satisfaction, loyalty and repeat purchases. Lastly, according to Target, it is 40% cheaper to fulfill an order from a store than using an upstream DC. And it is not just Target using its stores to fulfill online orders. Small retailers and huge retailers alike such as Walmart, The Home Depot, Best Buy and Dick's Sporting Goods are all shipping and fulfilling orders directly from stores.

Using stores to fulfill online orders can be a tremendous advantage and can help retailers compete with Amazon's one-day shipping in terms of speed. For example, if a customer orders something in Nashville, Tennessee, and it gets fulfilled by a store three blocks from the customer's house rather than the product having to travel hundreds of miles from a DC in Alabama can create immense cost savings. The end result is that price points go down, margins go up and speed goes up. And a company like Walmart has unrivaled transportation infrastructure in place built up over decades and 4,800 stores in the U.S. to serve this purpose (90% of Americans live within 10 miles of a Walmart). For these reasons, many retailers find that an omnichannel (meeting the customer at multiple touch points) approach makes sense, as opposed to a pure-play online fulfillment channel.

Abeson sees using stores as fulfillment centers as more of a temporary, stopgap solution borne out of necessity to the rapid unprecedented demand shift due to COVID-19 and that the superior e-commerce providers in the future will be better served by building out dedicated e-commerce fulfillment centers and channels. There will certainly be a place for retailers that ship and fulfill from stores such as Target (that are experts in this arena), but the overall e-commerce market should see continued bifurcation between physical stores and pure e-commerce solutions in Abeson's view. After the pandemic when demand normalizes, in his opinion, "retail will go back to being retail and e-commerce will continue to be supported by an e-commerce fulfillment channel. Having inventory in a store and then having a customer come pick it up may not be deemed optimal in many cases. Nimble inventory management will continue to be critical and it is all about having the right product in the right place at the right time so you can fulfill from your closest distribution point."

Regardless of what approach retailers take, increasing e-commerce penetration is requiring rapid increases in the advancements and deployments of technology (in addition to physical assets) that allows all participants along the supply chain to communicate and have transparency into a good's transportation journey all the way from manufacturing to customer delivery. Further, with greater e-commerce comes increasingly more customer returns, which is fueling the rise of the reverse logistics industry. And finally, it always makes sense to consolidate as much product as possible from a cost-savings standpoint both on inbound and outbound logistics (i.e., using more truckload compared to LTL or parcel on inbound and shipping multiple items in one box wherever possible on the outbound logistics side).

CONCLUSION

For retailers that are subscale or that do not have a core competency in e-commerce, we believe outsourcing e-commerce fulfillment and inventory management to a company like Ryder makes a great deal of sense because it allows a particular company to focus on their core competencies while reaping the benefits of leveraging shared costs and an expert, high quality fulfillment network (on par with the biggest players in e-commerce).

E-commerce is changing the face of both retail and transportation. E-commerce should continue to grow at a mid-teens annual rate for the next decade and ultimately not reach maturity until at least half of every dollar in retail sales is derived online in our view. From a supply chain perspective, it is vital that retailers figure out how to meet and best serve customers where they want, when they want and with the right product and still do so in the most efficient and cost-effective manner from a transportation standpoint (whether that is insourcing, outsourcing or a combination of both). Customers generally do not know (or care) how the products they order get to them, they simply want to receive them rapidly, with "free" shipping (even if the additional cost may

get baked into a higher sticker price) and without negative experiences such as late deliveries and exceptions.

But for shippers and retailers, managing costs and keeping up with Amazon will be table stakes because investors will want to see both higher margins and rapid growth. Designing the optimal e-commerce supply chain and fulfillment channel is not a one-size-fits-all approach and there will be nuances and variations in terms of what works best for each individual retailer based on customer preferences and ordering habits. Supply chains will, however, continue to become hyper efficient and evolve to incorporate much more data and technology over time so that all parties involved across the supply chain know where inventory is, what their responsibilities are and how to quickly meet demand and get the product into the customer's hands. Winning retailers in the e-commerce era cannot simply look to minimize their supply chain costs though, because the true winners will need to deliver a unique and excellent customer experience and that includes meeting heightened customer expectations around increasingly rapid delivery windows.