The "E-Commerce Effect" on Supply Chains - Conference Call Transcript

Summary

With e-commerce growth accelerating the past couple of years, shippers have had to throw out the old supply chain playbook, as e-commerce has not only changed consumer buying habits but also rendered formerly efficient supply chains suboptimal. On this subject, we recently had the pleasure of hosting Lee Clair and Steve Fox from Transportation & Logistics Advisors (T&LA) to give their thoughts on the changes taking place and where the puck is moving as it relates to e-commerce and supply chains, specifically in the domestic U.S. There are winners (parcel and LTL) and losers (truckload and intermodal) from these changes, according to T&LA. Below are other key takeaways and an edited transcription from the call. Stifel has no opinion on, and is not responsible for, the views expressed in this transcript by participants who are not employees of Stifel.

Key Points

- **Any discussion of "e-commerce" usually begins with "a."** Amazon (including its marketplace) is estimated to have ~44% market share in the U.S. and has led many of the changes in the industry, introducing the concepts of free shipping, free returns, same-day delivery, and developing transportation capabilities for home delivery that no other retailer has ever had. Unlike Wal-mart's winning supply chain strategy in the '80s-'90s, when it used "lowest-cost" as its competitive advantage, Amazon seems focused on (in addition to the all-important customer experience) raising the stakes and forcing competitors to a "high-cost" supply chain, where it has a significant relative advantage due to scale. For more of our thoughts on Amazon's move into logistics, see our note from last week here.
- **All retailers and supply chains not created equal**. E-commerce impacts a wide range of industries - from fashion to furniture to food - and depending on a company's current supply chain, product type, lead time, customer base, price point, and other factors, each one will have a different "optimal" strategy. Interestingly, Clair and Fox showed that e-commerce supply chains have roughly the same cost as a brick and mortar supply chain, trading off labor and rent expense for higher transportation and warehousing costs. Should be interesting to see how this develops, as online retailers open up stores and legacy brick-and-mortar players significantly grow into e-commerce.
- **Big themes** - *1) warehouses are different*, as the shift is from pallets to each's (some in the industry have cited a much greater need for square footage due to this change, all else equal), *2) inventory management becoming more important*, requiring better visibility (as we discussed in more detail along with other e-commerce supply chain themes in What Do Target, Nike, Home Depot, Google, Walmart, and Others Have to Say About the Supply Chain? D3 Conference Takeaways and Welcome to the Jungle - Theme Song of the Amazon-Led Retail Supply Chain World), *3) having more distribution centers (DCs) becomes optimal* but increases network complexity, *4) goal is now to minimize outbound freight cost* after decades focused on minimizing inbound freight costs.
- **Parcel wins.** Likely an obvious statement, but the biggest "winner" to-date has not been UPS or FedEx but rather the U.S. Postal Service and its Parcel Select product. The biggest customers of Parcel Select, though, are FedEx, Amazon, UPS, and Newgistics. Most retailers and e-tailers can't access it directly for home delivery.
- **LTL wins.** We have been talking about this for the past couple of years - the biggest opportunity for LTL carriers is not in last-mile but with inbound moves to distribution centers (DCs) and fulfillment centers (FCs). Of course, like everything, incremental volume needs to be priced appropriately, so don't expect all LTL carriers to benefit equally.
- **3PLs win.** Because e-commerce is requiring heavier IT investment, many shippers will look to their 3PL partner to make this investment. Also, to mitigate scale deficiencies, smaller retailers can partner with a 3PL to occupy space in a multi-client facility and even leverage the 3PL's purchasing power through a transportation management relationship.
- **Truckload loses.** Now, truckload has the most to lose, as the largest mode in U.S. transportation (by a mile). And even a minor impact on TL would have a significant impact on the much smaller modes, like LTL, parcel, and intermodal. Furthermore, the driver shortage and capacity crunch we've seen in recent months may mean some modal share loss is best right now.
- **Intermodal loses.** This one is not as obvious, as the traditional thinking is that intermodal is a secular grower (vis a vis truckload). The speakers' view here was that due to the high concentration of intermodal traffic around certain long-haul high-density lanes, the dispersion of freight lanes to become shorter-haul and more fragmented will be outside these lanes and result in share loss. In addition, more international containers may be stripped and stuffed into domestic trailers for TL and LTL shipments rather than staying intact to move inland to a DC.

David G. Ross, CFA | (786) 257-2413 | dross@stifel.com
J. Bruce Chan | (786) 257-2411 | chanb@stifel.com
Austin Remey | (786) 257-2409 | remeya@stifel.com
Stifel Equity Trading Desk | (800) 424-8870

David Ross

Welcome back for another Stifel conference call. I'm very excited this morning to have with us Lee Claire and Steve Fox from Transportation and Logistics Advisors to talk with us about e-commerce, which is a hot topic that is having a big impact on shipper supply chains everywhere. What used to be optimal is no longer optimal and Lee and Steve will walk through their very content rich deck with us here shortly. We've known Lee and Steve for a number of years, they've been in the business for a couple decades consulting with a variety of firms, in the transportation and logistics space. They have a deep knowledge of the supply chain industry across all modes so with that I'm going to turn it over to Lee and Steve, they'll walk through their slide deck and we'll have Q&A at the end.

Lee Clair

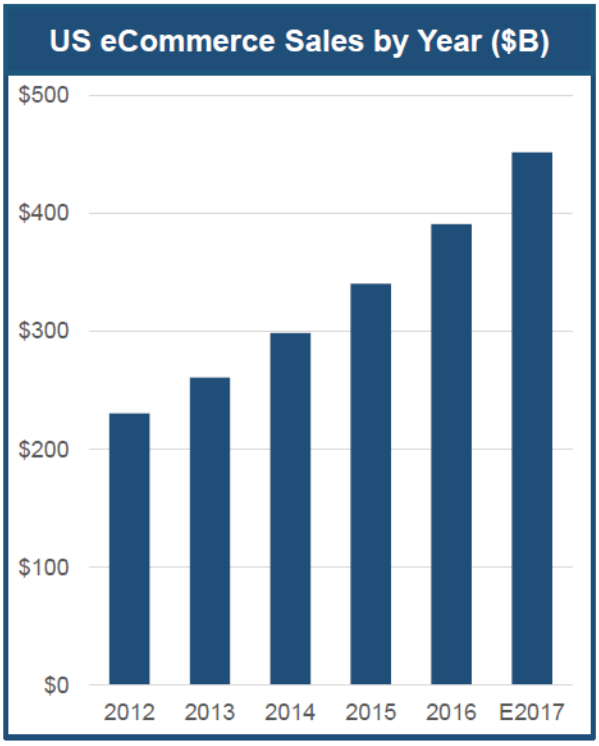
Good morning, it's Lee Claire, I'm going to start us off and then hand it over to Steve for the first part of this presentation. Transportation and Logistics Advisors is a management consulting firm; we help people make better decisions. We focus on the transportation industry and in the past that meant that most of our work was for railroads and multi-billion-dollar truck and ship lines. As the world has changed and evolved we're doing a tremendous amount of more work around e-commerce and that has not only been for the large small-package companies but also for many of the newer, smaller and different players entering the market as well as people who buy the services as well.

Steve's going to walk us through e-commerce and the industry, its characteristics, and the trends and then I'm going to be talking with us mostly at the end again about the implication for various modes and different providers in the transportation industry. With that, I'm going to hand it over to Steve Fox.

Steven Fox

Great, we'll start with **Exhibit 1** to set the scale US e-commerce, which is a $450 billion market. It's growing about 15% per year, which means it's almost doubled in the last 5 years. Interestingly enough, the growth has actually been accelerating, not decelerating. Currently, the estimate is that e-commerce accounts for about 8.4% of total retail sales, it can get higher than that if you pull some categories out that aren't necessarily e-commerce friendly. In round numbers we're looking at 10%, so only one out of every ten dollars is spent through e-commerce, but it certainly has an outsized impact on the supply chains.

Exhibit 1: US E-Commerce Sales

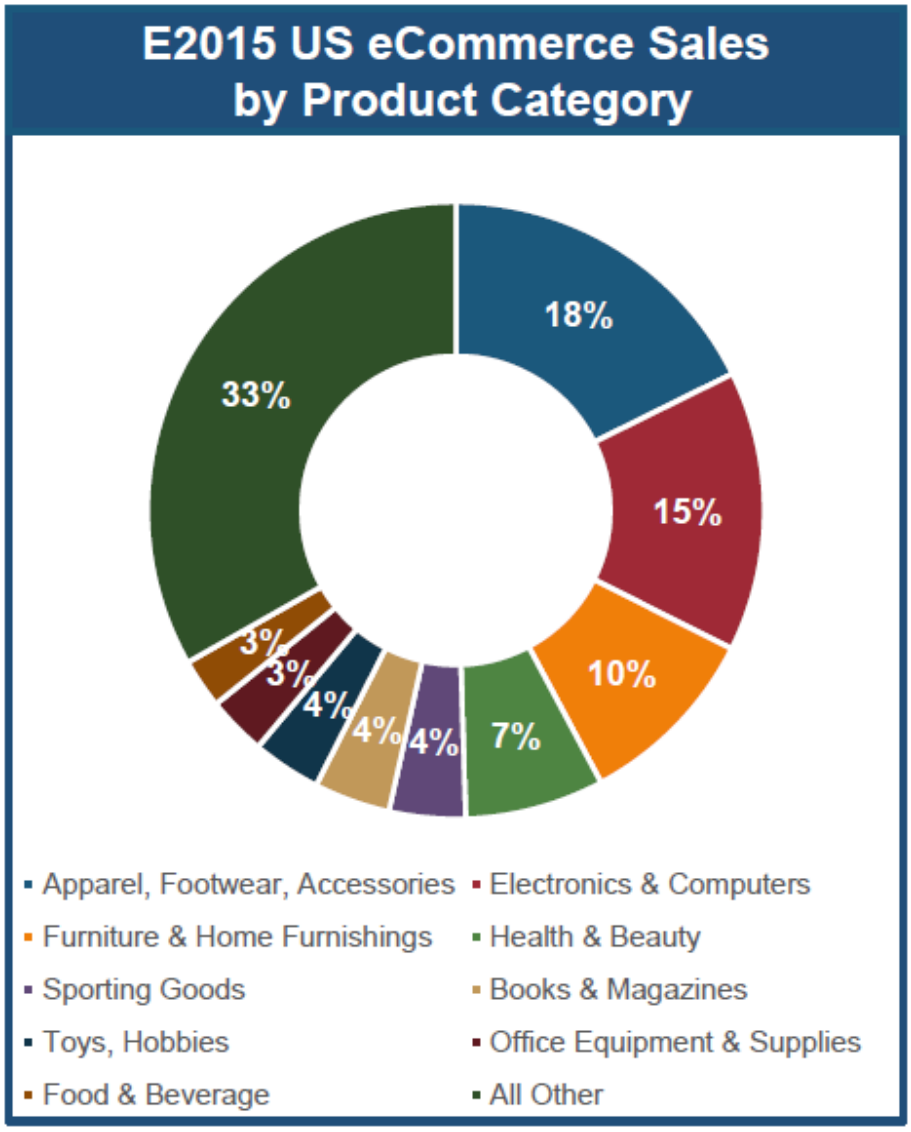


- Estimated US 2017 eCommerce sales of $450 B
- Growth is accelerating
  - Q1-Q3 2017 grew ~15.6% year over year
  - 2016 growth: 14.9%
  - 2015 growth: 14.0%
  - 2012 – E2017 CAGR: 14.4%
- eCommerce sales accounted for about 8.4% of Q1-Q3 2017 total US retail sales
  - 2016 eCommerce was 10.5% of US Retail Sales excluding autos and auto parts
  - Internet Retailer claims 2016 eCommerce penetration of 11.7%

Source: US Census Bureau, Internet retailer, E2017 based on annualized Q1-Q3 2017 increase

Exhibit 2 shows the e-commerce break out across product categories. There are some leaders, apparel and footwear and electronics are the two biggest categories. One of the most interesting things is how dispersed e-commerce is across a wide range of products. It's effecting almost every product category to some degree.

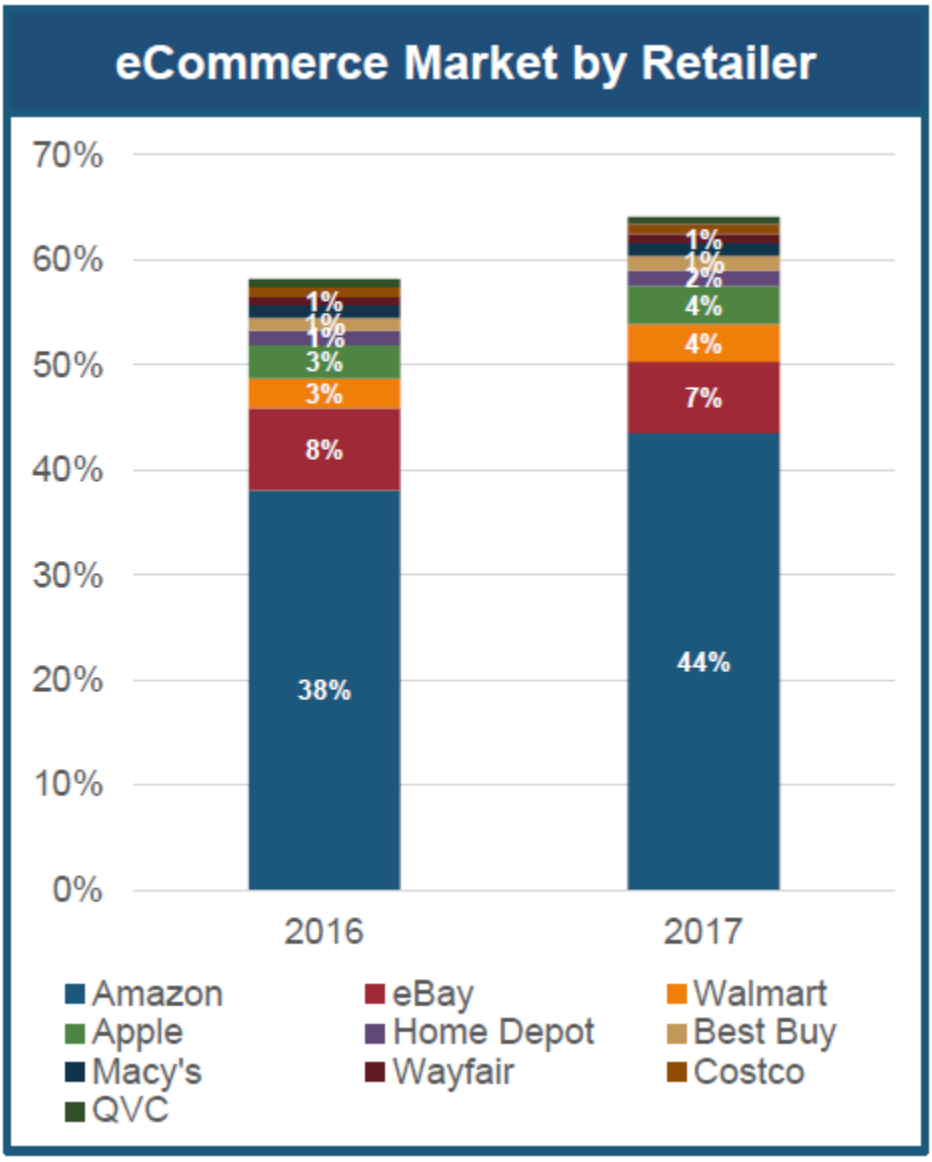
Exhibit 2: US E-Commerce Sales by Product Category



Source: US Census Bureau, 2017

As shown in **Exhibit 3,** Amazon is by far the largest e-commerce retailer. Amazon's marketplace accounts for an estimated 44% of the US e-commerce market. It doesn't mean that Amazon directly sold the goods, it may have been sold by a different retailer through the Amazon platform. Retailer 2 through 10 account for about 21%, so Amazon is about twice as big as the next 9 guys combined, which shows you the overall scale. The other interesting thing is that the Amazon share is growing so fast, despite the fact that they're the biggest guy they're also growing faster than the overall market.

Exhibit 3: E-Commerce Market by Retailer



Source: Chain Store Age/eMarketer 10/2017; Internet Retailer

In addition, Amazon has been a major influencer of e-commerce supply chains. They've introduced a lot of the things that other companies have to either try to replicate or compete against. This includes things like free shipping, free returns, and same-day delivery. They're starting to develop their own

transportation capabilities and, more recently, they've been driving their DC network to a much more local fulfillment center model, which is very difficult for others to compete against.

In **Exhibit 4**, you can see other companies aren't standing still, they are starting to respond. Amazon's presence is resulting in more acquisitions from large retailers. Walmart, for example, acquired Jet in 2016 for about $3 billion to increase their overall e-commerce retail size and also gain a lot of the supply chain expertise and capabilities that Jet had developed. They've also lowered their barriers for free shipping, they used to have an equivalent to an Amazon Prime type model but they've actually lowered that barrier to increase the amount of shipments eligible for free shipping. Target recently acquired Shipped, which is a same-day delivery platform focused mostly on grocery and food, but once you have the capability you can use it more broadly.

Exhibit 4: Competition's Response to Amazon

Retailers	Carriers
• Walmart becoming more competitive – Acquires Jet.com (2016) – Lowering barriers for free shipping • Target – Acquires same day delivery platform Shipt (2017) – Free shipping with branded card • IKEA acquires "jobber" company TaskRabbit	• UPS investment in same day delivery company Deliv (2016) • Parcel carrier changes to pricing

Source: TandLA

Ikea acquired Task Rabbit, which isn't strictly an e-commerce play but a new economy play where they've gone out and bought a company that crowd sources people to do jobs, and in the case of Ikea, it's going to be to put together their furniture. On a carrier side, UPS invested in the company Deliv, which is one the leaders in same-day delivery using a crowd sourcing model. They made that investment in 2016 and then parcel carriers have made a range of changes to their pricing.

Exhibit 5 covers some key trends and how they affect the supply chain. E-commerce has had an impact on almost all aspects of businesses. It changes how you go to market. If you're a brand, manufacturer, or distributor you traditionally sold through brick and mortar retailers and have long and deep relationships with them. With the new model, there are many questions that arise. Do you want to be selling through their online platform? Do you want to be selling through Amazon? If you're a brand, do you want to have a direct presence on the web so that you're selling direct to customers and how does that impact your channel partners and develop channel conflicts? This year, Nike started to sell at least to a limited degree on Amazon.com after having been resistant for years. So, even companies with global leading brands are still trying to figure out what it means to be a participant on the e-commerce side.

Exhibit 5: E-Commerce is Changing

How companies go to market	Customer expectations on product delivery times	Customer expectations on ability to return products	Fast growth
• Manufacturers/ distributors – Sell through traditional retailers? – Sell through Amazon and other eTailers? – Sell direct through brand website? – Channel conflicts? • Retailers – Omni-channel approach – Marketplaces	• Slow and cheap, or fast and expensive? • Free shipping expectations? • What will consumers demand and pay for? • Same-day? • How to compete with Amazon?	• Free shipping of returns? • Consumer mentality — buy 3, return 2 • Where and how to process returns?	• What volumes should be planned for • How to maintain flexibility

Source: TandLA

Customer expectations around product delivery and product returns changes things completely. There's a lot of expectations now because of Amazon's free shipping and delivery speed standards. Same-day shipping, which none of us would have ever believed a decade ago, is starting to become more regular. On the return side, the volume of returns is much higher, especially when companies offer free shipping on returns. There are even companies with models, where you buy three with the expectation that you're going to return two.

The fast-paced e-commerce growth environment makes it very difficult to plan. What's your volume today? What's your volume going to be like in 5 years through an e-commerce channel? How do you maintain flexibility so that you don't have to reinvent the wheel every two or three years if you double or triple in size over that period of time? These are all questions that businesses need to explore in this current environment.

Exhibit 6 shows that e-commerce doesn't just require a new way to think but it really requires a different way to operate. Traditionally, shipments were from DC's to stores, they were typically large truckload shipments with relative low frequency. In the e-commerce world, it's almost the direct opposite of that. You now have high volumes of small shipments that are typically shipped via parcel. Many shipments are at the individual item level, as opposed to the pallet or case level; this model typically requires manual picking and packing. You can automate this process; however, it ends up being very expensive. Many factories are making significant investments into warehouse automation projects in efforts to support heavy e-commerce volumes.

Exhibit 6: E-Commerce vs Traditional Operations

	Traditional Retail	eCommerce Fulfillment
Outbound Shipment Volume	• DC to store • Low frequency of large shipments (TL, TL multi-stop)	• DC to consumer • High frequency of small shipments (parcel)
Warehouse Operations	• Racked pallets, moved with fork lifts • Staging of multiple pallets to move into trailers • Limited handling or packaging — some mixing, shrink wrapping	• At individual product level – "eaches" • Manual picking • Packaging lines • Can have pre-sort for packages for parcel carriers • Can be highly automated picking systems with large capex investment

Source: TandLA

Let's take a look at **Exhibit 7.** Technology can be a useful tool to help you successfully shift to an e-commerce environment, but in a lot of cases systems aren't configured properly. In the typical retail warehouse, inventory management is often going to be at the pallet level or more likely the case level, but not at the individual item level. To support adapt to the e-commerce model, you have to build that capability into your technology. Order picking and routing within the DC is much more complex and labor intensive than a forklift environment. Handhelds are obviously a key component.

Exhibit 7: Technology

- Inventory management at various levels
  - Pallet
  - Case
  - Each
- Order picking
- Premium on real-time information — in both directions
  - What is in-stock
  - Applying orders immediately to inventory
  - Shipping cost
- Integration with various systems, often cross-company
  - Web "front end" (Demandware, IBM, Oracle, SAP)
  - Various order management systems (Jagged Peak)
  - Warehouse management systems (JDA, Manhattan)
  - Various ERPs (SAP, Netsuite)
- More complex returns

Source: TandLA

For online retailers, the website has to know what's in stock, on a real-time basis, so customer's orders can be fulfilled in time. Additionally, the inventory management software is very useful for re-ordering and managing inventory levels to maximize operating efficiency and profits.

Exhibit 8 shows how even pure-play e-tailers have significant challenges as they scale. Obviously, every startup has goals to grow fast, but you can't build out your infrastructure assuming you're going to be a billion-dollar company in few years. Typically businesses start with a single fulfillment location; however, limited distribution network creates higher prices for shipping outbound individual small packages.

Exhibit 8: Web-based Retailer Challenges

eCommerce Challenges	Options/Issues
• Typically begin with single point fulfilment – Insufficient scale to stock multiple DC's – Leads to high delivery costs, longer delivery times • When grow to multi-DC – Causes technology issues – Legacy DC's in wrong location – Requires more inventory	• DIY vs. Outsource • Single vs. multi-user facility • Managing returns • Returns restock vs. liquidation

Source: TandLA

One of the key cost components is going to be much higher when you have a single location, this will also lead to longer delivery times and in this day and age, people want it cheap but they also want it fast. When you grow to multi-DC model, you begin to realize benefits of scale, such as lower delivery cost and faster delivery times; however, it comes with its challenges. It's a much more complicated network to run and you're going to have more inventory. Some companies choose to go the DIY route, others outsource those functions and create partnerships with other companies. There can be benefits to operating in a multi-user facility, such as realizing the benefits of scale without actually having the volume to support it yourself.

Returns are much higher in many of the product categories than are experienced in a brick and mortar environment (**Exhibit 9**). Free shipping and free returns encourage more returns. In some cases, returns are even a part of the sales model.

Exhibit 9: Returns

- Returns are much higher in many product categories – in store is typically low single digit percentages
  - 20-30% of apparel purchased online
  - ~10% of hard goods (home goods, toys) purchased online
  - 87% of retailers allow for online returns to their stores — encourages additional purchases
  - Free shipping encourages returns
  - Returns frequently are part of the sales model (buy 3, return 2)
- Sales spikes are greater than in physical stores
  - Flash sales
  - Subscription models

Source: TandLA

Exhibit 10: Transportation & Fulfillment

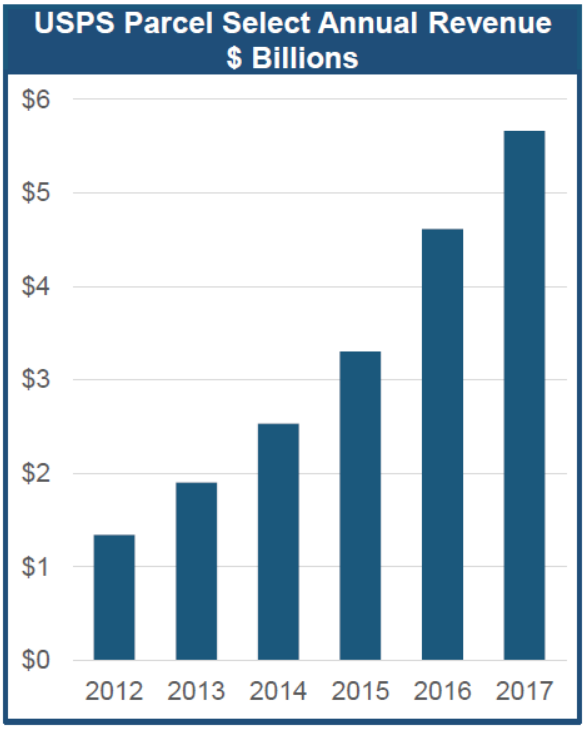
	Express	Ground	USPS Delivery (Parcel Select)	Same Day
Service	• Parcel carrier air or ground • Time definite	• Parcel ground carrier	• Parcel carrier does bulk pick-up, sort, line haul • USPS provides final mile delivery	• Courier delivery
Speed	• Next day/ 2nd day	• 2-5 days	• 2-7 days	• Same day
Cost	• High	• Medium	• Lowest	• High
Position	• Easy • High quality • Expensive	• Easy, less expensive than Express • DIM issues	• Lowest service • Lowest cost • <5 Lb. packages	• Amazon in major metros • Difficult for most others to follow • Some via shared economy

Source: TandLA

Exhibit 10 breaks down the common transportation and fulfillment offerings. There's a range of different parcel shipping options. 15 years ago, we would have all believed that express and ground were going to be the big beneficiaries of the e-commerce boom. While that's been true, to some degree, things have really morphed into the lower cost environment. One of the services that's grown significantly is US Postal Service delivery for the final mile of products. That's a product where either the retailer, like Amazon, UPS, or FedEx will actually do the pickup, they'll do the line haul move and sort the packages and deliver them directly into the local post office. The local post office will then make that final mile delivery during their courier routes. It's the low cost option and it keeps the company, whether it's UPS, FedEx or somebody like Amazon, from having to do that final mile delivery to the home.

Then again, if you go back 15 years ago I don't think any one of us would have envisioned same-day delivery being a feasible option. Amazon has pioneered that movement and it's obviously the highest cost and highest service-level option, but it's very difficult to make the economics work unless you have very high density of shipments. As Amazon pushes in that direction, it's going to be very difficult for others to follow because they are not going to have that same density as Amazon.

Exhibit 11: USPS Parcel Select



- USPS Parcel Select product growth has been rapid
  - 2012 – 2017 Revenue CAGR: 33%
  - 2012 – 2017 Volume CAGR: 24%
- Providers such as FedEx SmartPost, Newgistics, and UPS SurePost have been growing fast
- Parcel Select has grown despite USPS pricing increases
  - Revenue Per Piece:
    - 2012: $1.43
    - 2017: $2.02
  - Revenue Per Lb.:
    - 2012: $0.77
    - 2017: $0.89

Source: USPS revenue, pieces & weight data, TandLA experience

The USPS Parcel Select product (in **Exhibit 11**) has exploded in growth over the last 5 years. In fact, from 2012 to 2017, it's grown more than four times. Parcel Select is not a product that you or I could buy, it's a product that UPS, FedEx, and similar companies utilize. FedEx has a product called Smart Post, which is their Parcel Select product and UPS has Sure-Post. In addition to volumes growing quickly, the USPS also has been increasing their prices for this product so the overall growth has been a combination of strong revenue and pricing growth.

Exhibit 12 shows some of the changes that are going on in the Parcel Select product. This has become one of the most common ways to get your e-commerce deliveries. FedEx and UPS are converting their Parcel Select shipments to dimensional pricing. Dimensional pricing is a different type of a system that is used by carriers so that they can more effectively cost light, bulky shipments. Normally, you think parcel shipments are basing prices on weight and distance (distance is expressed in terms of zones), but in that environment you can ship a very large but very light package at a cheap price. What dim pricing is meant to do is counteract that and say that a large package takes up a lot of space in a truck so it actually shouldn't just be viewed based on weight, but should be priced based on the weight and the size.

Exhibit 12: Dimensional Pricing Changes

Description	Impact
• DIM pricing is used by carriers more effectively cost light, bulky shipments – Parcel pricing based on both package weight and dimensions – Light bulky shipments are assigned a higher weight and billed at that weight • FedEx and UPS instituted dimensional pricing for ground shipments around year end 2014 • More recently UPS changed SurePost product to DIM pricing, FedEx changing SmartPost to DIM pricing 1/22/2018*	• Shippers of relatively large, low weight packages pay higher parcel rates • Operational impact - Increased emphasis on better packaging. Smaller boxes • Merchandizing impact - Potential to add products to a shipment without adding shipping cost • Benefit of avoiding DIM pricing by using Parcel Select products is going away

Source: TandLA experience, UPS, FedEx websites, FedEx rate change except for shipment by the ounce

As UPS and FedEx institute this in the Parcel Select products, it could have some impact on the growth rate of these offerings going forward. It is, for some shippers, going to make it more expensive if you're a shipper of products that are light and large then you could have some fairly significant price increases. The other thing it does is it does put an even greater emphasis on having the right size packaging for the product, we've probably all had experiences where you open up an Amazon box and it's three quarters air and you think to yourself wow I can't believe that they couldn't ship this in a smaller box. With dim pricing coming into play there's probably going to be an increased emphasis on trying to match the packaging size to the actual product size.

In addition to what's going on with dim, there are some other important factors that relate to Parcel Select. Let's take a look at **Exhibit 13**. One that just happened a couple weeks ago, is President Trump's tweet regarding Amazon getting a "sweet deal" for their parcel delivery services and that the USPS should be charging much more for their delivery services. How that actually plays out is anyone's guess, but if The USPS significantly raises rates, that will obviously have an impact on USPS volumes and Amazon's last mile delivery process.

Exhibit 13: Additional Parcel Select Factors

Introduction of DIM Pricing by FedEx and UPS	Political Influences	USPS Capital Requirements
• Could decrease attractiveness of Parcel Select products vs. standard ground	• President Trump tweets that for delivering parcels to homes for Amazon, USPS "Should be charging MUCH MORE" 12/29/2017	• USPS fleet designed for mail delivery, not parcels • Could require a new fleet investment • New sort capabilities?

Source: TandLA experience, UPS, FedEx websites, WSJ 12/29/2017

The other thing, as it relates to Parcel Select and the growth rate, is that USPS suite isn't really designed for delivery of parcels, it's designed for delivery of mail. A lot of times your packages are actually being delivered by the same mail truck that's been coming by your house for the last 100 years. If this product continues to grow it may require a new investment in fleet, maybe something like sprinter vans, which are a better fit for this type of delivery than your traditional mail truck. Additionally, in order to support these volumes, the USPS may need to make investments in additional sorting capabilities.

As I mentioned earlier, if I would have told you 10 years ago that same day delivery was going to be an option, you would have said I was crazy. Amazon is aggressively working on building this capability out. Let's take a look at the maps on the right hand side of **Exhibit 14**. In 2015, they offered free same day shipping for prime customers in 14 cities; in 2016 that map had grown to 30 cities and 1,000 towns. At this point in time, they no longer make a map because there are too many cities to name, but they now claim that there are 8,000 towns and cities included in this program. It's very hard to do this well and make the economics work because of the high service level and required level of route density.

Exhibit 14: Same Day Deliveries

Advantages	Challenges
• Highest speed to customer	• Inventory must be close to customers
• Best alternative to physical shopping - "need it now"	• Very difficult to have density to make low cost delivery

- Amazon offerings
  - 1 and 2 hour delivery (Prime Now) currently available in 32 metro areas (not all zip codes)
  - Sunday delivery
- Retailers offering same day through 3PLs and crowd sourcing providers
- **Without a local network Same day is cost prohibitive**

Now claim 8,000 towns and cities

Source: Amazon.com, Best Buy Website, TechCrunch, TandLA experience

You need to have a lot of packages delivered to customers in a relatively defined area so that cost per package delivery remains low; however, it's much harder to do this in a same-day shipping environment, without lead time to plan out efficient routes. Other retailers are trying to offer a competing capability, often times it's through 3PLs or companies like Deliv. Retailers can also leverage their stores for this to some degree. Amazon is working on further supporting this capacity by building out their local fulfillment center network, whereas other companies don't have a DC network across dozens of cities, but they do have physical stores all over the place and that's a way that they can compete in a different way against Amazon. Amazon has also introduced Sunday delivery as they continue to push the boundaries of what service means, from a transportation perspective.

When we think about the different options, from a fulfilment perspective, there are a lot of different options and it's not necessarily going to be a one-size fits all. In a lot of cases, it's going to depend on the situation for a specific retailer or a specific brand that's trying to solve or deliver in an e-commerce environment. The single fulfilment center is the easiest place to start in a lot of cases, you have one location where all your inventory is located. It makes inventory management easier. Sometimes, if you're a retailer, you can call a fulfilment center a store and a store is a location at which you do measure items

at the individual item level as opposed to at the pallet level, so it's a way to trick your technology into making fulfilment a little bit easier.

Exhibit 15: Order Fulfillment

	Advantages	Disadvantages
Single Fulfillment Center	• Fits in existing technology/network as a "store" • Can start small, easy to start and manage • Minimize inventory safety stock	• High cost final mile delivery • Long and variable delivery transit
Multiple Fulfilment Centers	• Lower final mile costs • Better delivery transit	• Omni-channel technology issues/complexity • Inventory levels • Scale to make centers efficient
Stores	• Close to customers • Existing space and inventory • Facilitates same day	• Greatest omni-channel issues • High cost DC – labor, per sq ft • Interrupt merchandizing and store operations

Source: TandLA

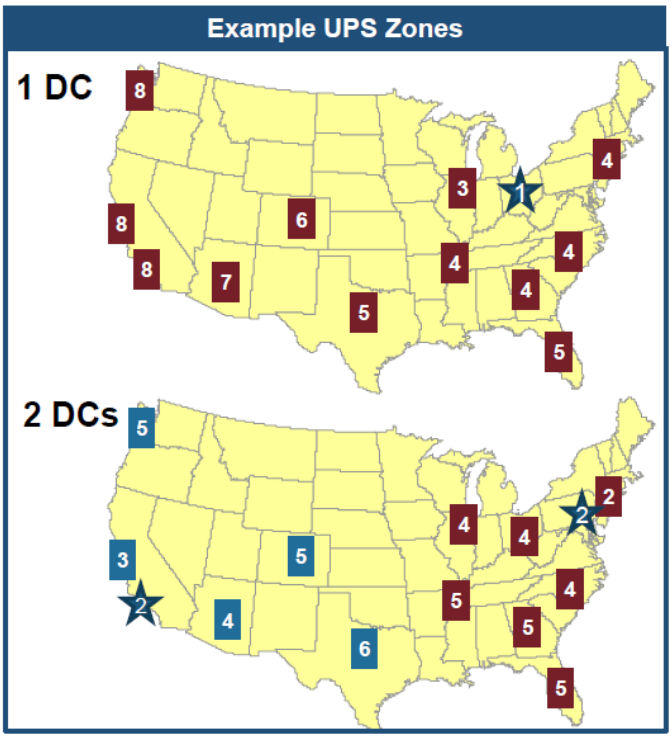
The disadvantages of having a single fulfilment center is that you're going to have a high outbound delivery cost because you're shipping nationally from one location and it's going to increase your transit times. Moving to multiple fulfilment centers lowers your final mile delivery cost because you're closer to your end customers and also lowers delivery transit times, but this adds a lot of complexity. You have inventory in more places and the more places you have inventory, the more total inventory you're going to have. As brick and mortar retailers move toward fulfilling more online orders, the big advantage they have is that they already have physical locations close to their customers. These physical locations are starting to double as store fronts as well as fulfillment centers.

There is a fourth option, which is running the fulfilment center out of your traditional pallet based warehouse. It's very disruptive to try and run both models out of the same facility, so it's typically only going to work for small volumes.

Drop shipping also is a trend that has been gaining traction lately, which is when a retailer sells a product on their website, but does not actually hold any inventory. The retailer takes the orders and the manufacturer or distributor ships it directly to the home customer as opposed to shipping it to the retailer to then forward on. Even non-online retailers that shouldn't really have to have that fulfilment capability have the fulfilment capability because retailers are demanding drop ship capability.

Exhibit 16: Multiple DC Benefits

- Significantly lowers average Zones
  - Lower cost
  - Faster delivery
  - Reduced variability
- However — Creates a lot of issues and challenges
  - Omni-channel technology and operations issues
  - Increased inventory
  - Required scale to support multiple operations
- ***Note: Optimal network requires moving the initial DC***



Source: TandLA, UPS website

Exhibit 16 shows an example of the change in economics, from an outbound transportation perspective, as you move from one DC to two DCs. If you have one DC located in a place like Columbus, Louisville, or Memphis, it's relatively close to population centers in the east but it's a long way from population centers in the west. They're going to be long zone moves, which is going to take longer. When you move to two DCs, you reduce high zone moves, lower cost, and reduce transit times; however, it's much more difficult to manage.

As we move into **Exhibit 17**, I know we've talked a lot about complexity. One way to handle this is to make it someone else's problem. There are 3PLs and fulfillment providers out there who provide this type of service and it can be an attractive option for companies. We talked about technology and the 3PL makes the investment in technology as opposed to the customer having to make it. The 3PL is already going to have the ability and expertise to manage product at the individual item level. Also, there could be benefits in having a shared facility to gain scale, so you don't have to size the facility based on your own volumes. If you share a 3PL facility, you can get some of the scale benefits without being large yourself. Also, sometimes the 3PL has other benefits, like lower cost labor and transportation. There are a range of companies who provide that type of service today and, for a lot of companies, fulfilment is not a core aspect of what they do and they would much rather have someone else handle it for them.

Exhibit 17: Outsourcing Fulfillment

Outsourcing Benefits	Example Providers
• 3PL invests in technology • 3PL expert in handling "eaches" • Can use space in a shared facility to gain scale benefits • Faster way to build capability • Can have lower cost labor • Can have lower cost transport – Leverages scale of 3rd party provider – Provider may have volume to pre-sort for carrier • Fulfillment is non-core for many companies	• Amazon Fulfillment • Radial (acquired by bpost, 2017) • PFSWeb • Newgistics • Saddle Creek

Source: TandLA

I'm going to turn to the relative economics and I'm going to hand it back to Lee to take us forward through that section.

Lee Clair

Since the numbers are never as much fun, Steve's going to give it to me. As I walk through this, we're actually going to start without the numbers. In **Exhibit 18**, we'll start conceptually in how this fits together. It's interesting, we have always tried to focus on the supply chain total delivered cost and in many cases many of our clients, on the shipper side, have been reluctant to view total supply chain cost, as they've been fragmented. For example, most companies have somebody in charge of managing inbound transportation, somebody in charge of outbound, and somebody else managing inventories. In this case, there's no escaping it. You really have to look at all of the pieces in the supply chain from the inbound cost to the facility to the handling to the inventory carrying costs and then the outbound final delivery cost because it's how all these pieces fit together and change under different models that's important. There are different things that drive these and they all react differently. For inbound cost, volume is big. If you can have enough volume and you're driving full trailers, it cuts the cost dramatically. Then, in the brick and mortar world, inbound cost becomes distance-related. For example, Inbound cost, let's say from Asia, coming into the facility is really big. Facilities, the bigger they are the lower the cost they incur, per unit, if you're filling them effectively. The handling cost, how efficient can you run it and inventory carrying cost, again the bigger the volume, the lower the inventory carrying cost. Delivery cost outbound, we'll see how that changes as we move through.

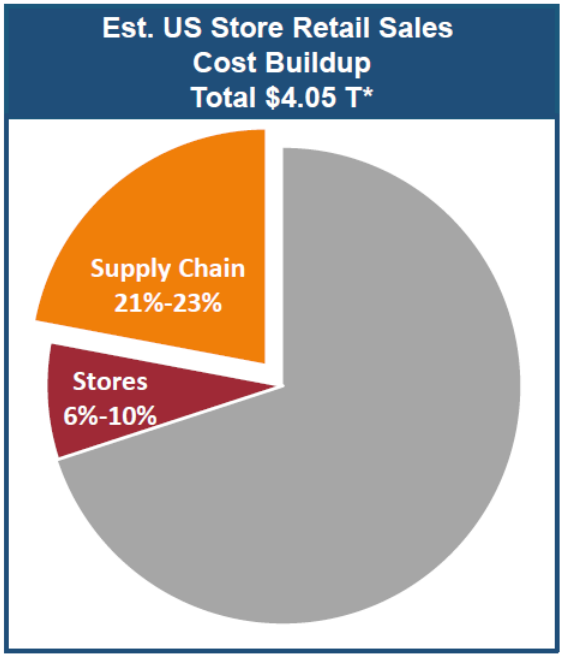
Exhibit 18: Lowering Supply Chain Costs

Drivers to Lower eCommerce Supply Chain Costs				
Inbound Cost	**Facility Cost**	**Handling Cost**	**Inventory Cost**	**Delivery Cost**
• Volume to support full loads • Multiple facilities to limit distance, re-shipping	• Scale benefits, dedicated or shared • Low cost locations • Amount of inventory	• Increased automation • Managing staffing to volume • Intelligent picking logic • Less complex product profile • Multiple products per shipment	• Fewer facilities = less inventory • Tech to manage inventory as pool • Faster inventory turns • Cost of capital	• Service level • Distance from customer • Volume to support density • Number of products per shipment

Source: TandLA

Moving to **Exhibit 19**, every company is different and depending on how they're structured and how they operate, these numbers will fluctuate, but this is a good start and a pretty good example of how it fits together. You wind up with the supply chain cost plus the store cost being about a third of the total cost of a retailer but what is that comprised of? Setting aside the store, which is a large chunk, the supply chain is being driven significantly by the inbound freight. Inbound freight can actually be reduced and controlled by having fewer large distribution centers and therefore less LTL, less parcel, and a greater chance of having more intermodal transportation. Additionally, the big facilities bring your fulfilment costs down because they are more efficient and can handle higher volumes, which reduce inventory costs.

Exhibit 19: Retail Supply Chain Costs

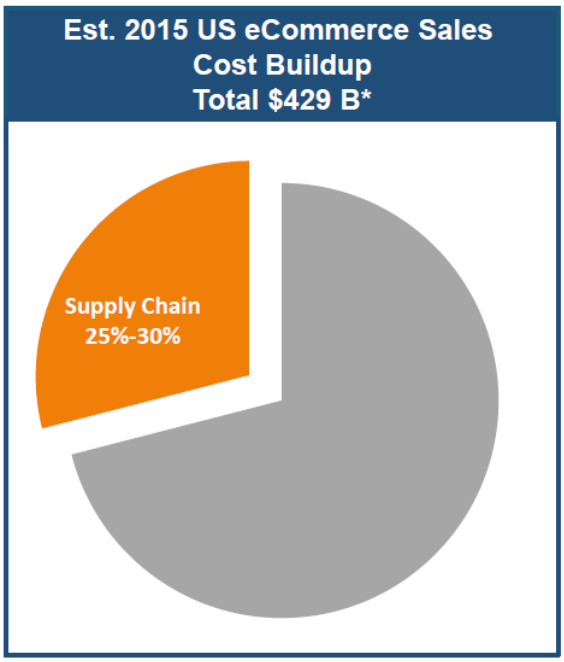


Est. Retail Store Supply Chain Cost		
Category	**% of Sales**	**Spend ($B)**
Inbound Fgt.	7%	$283
Fulfillment	4%	$162
Inventory	5%	$202
Outbound	3%-5%	$121-$202
Returns	2%	$81
TOTAL Supply Chain	21%-23%	$850-$930

- Store costs can be 6-10% (or more) of sales, $243 B - $405 B

Source: TandLA expertise and model estimates, U.S. Census Bureau, NYU Stern Business School industry profitability database, US Retail sales excluding auto and auto parts, assumed 7.7% pre-tax unadjusted operating margin

Exhibit 20: E-Commerce Supply Chain Costs



Est. eCommerce Supply Chain Cost		
Category	**% of Sales**	**Spend ($B)**
Inbound Fgt.	4-6%	$17-$26
Fulfillment	5%	$21
Inventory	6%	$26
Outbound	6%-9%	$26-$39
Returns	4.5%	$19
TOTAL Supply Chain	25.5% - 30.5%	$109 - $131

- Assumes a well run supply chain
- If sub-optimal, costs escalate – fast!

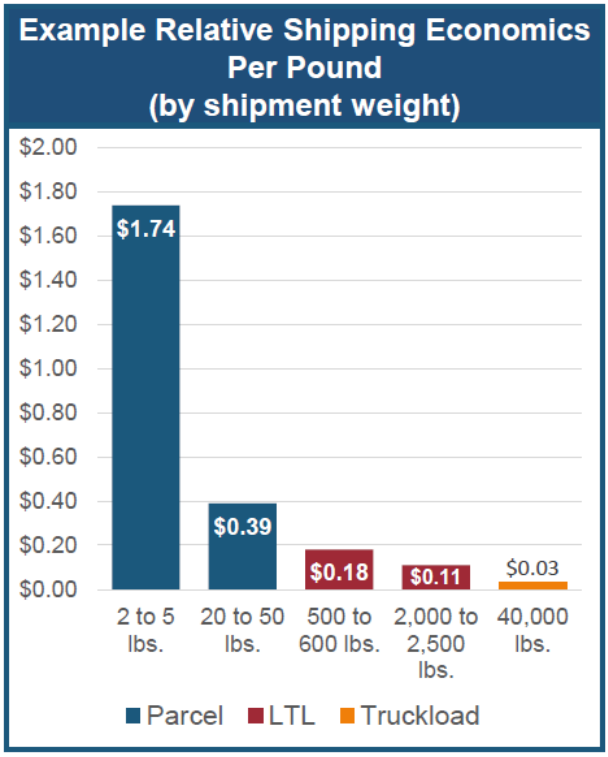
Source: TandLA expertise and model estimates, U.S. Census Bureau, NYU Stern Business School industry profitability database, US Retail sales excluding auto and auto parts, assumed 5.15% pre-tax unadjusted operating margin

As we look at the e-commerce supply chain costs in **Exhibit 20**, the outbound costs go up when you have a few facilities compared to brick and mortar operations. Brick and mortar operations typically have more exposure to truckload transportation, which is lower cost than premium expedited options that many e-commerce companies offer to their customers. Average return cost for e-commerce supply chain is more than twice that of traditional retail stores. We find it fascinating that the total supply chain cost difference between traditional retail and e-commerce is not that large, assuming both companies are running efficient operations.

As you compare **Exhibit 19** and **Exhibit 20**, you'll find that inbound freight is no longer the primary driver in the e-commerce cost model. The biggest e-commerce driver is outbound freight, while final mile delivery, inventory management, and fulfilment become increasingly important. It's not uncommon, by the way, for that return number to go significantly higher than what we're showing here as well.

Let's look at cost per pound on shipments of relatively equal distance in **Exhibit 21**. If you move things by truckload you're around $0.03 a pound if you can fill the entire trailer and move it all together. If you ship via larger LTL, you'll run that up three or four times. As you move to smaller LTL, it moves up dramatically again and don't let the scale of this chart fool you, those are big percentages. Then when you hit e-commerce you're not in LTL, you're not on a pallet, you're dealing with individual cardboard boxes being shipped. If you have a big box, the number is again a multiple of LTL and if you have a small box (2-5 pounds) taking standard ground, that number goes "through the roof".

Exhibit 21: Outbound Costs are Critical



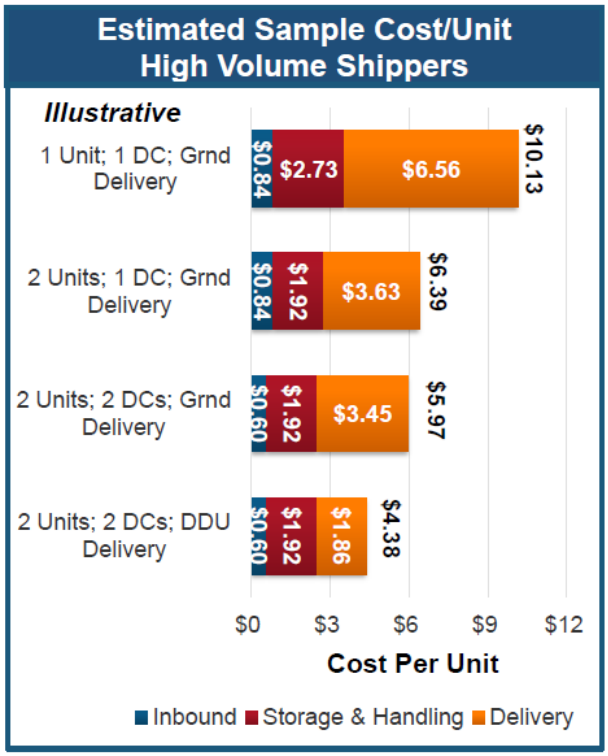
- Outbound transportation cost
  - Increase significantly in eCommerce environment
  - Parcel cost/pound can be over 10x the cost of LTL and TL to store
- Dimensional pricing further increases costs for light products

Source: TandLA expertise, model estimates

Everything you can do, from an outbound transportation perspective, to get closer to the customer and minimize the miles of that small shipment is a big help. This has been a big competitive advantage for Amazon because they have the volume, they have multiple fulfilment centers and get close to the customer and have very few of those really expensive small parcel shipments. They have a high percentage in that whereas if you don't have the scale and are shipping from a smaller number of fulfilment centers you're going to be having many more of those miles and a lot fewer of those $0.03/lb shipments. This is also why the shift to dimensional pricing is impacting the under 5-pound shipments so greatly and that number may get moved up even more, as you're not paying on the actual weight, you're paying on the weight based on the cube.

Exhibit 22 shows how all this fits together. We can put in how many different SKUs there are, how many DC's, and the type of delivery into our model to get an idea for how all these moving parts operate together. DDU is another term for Parcel Select. There are a couple things you can take from this exhibit. One of them, is how different the supply chain cost is when you change drivers and pieces. Second, is that outbound transportation, as we were just saying, is very important in driving total supply chain cost up. This model doesn't show inventory carrying cost, but that's another significant number that moves all over the board, depending on the value of the product, volume, and predictability. Look at these four hypothetical examples, and notice how the total supply chain cost spread is more than double.

Exhibit 22: Modeling Economic Impacts



- Inbound transportation cost benefits from local move from port in 2 DC scenarios
- Handling cost benefits from multiple products per customer shipment
- Delivery cost benefits from multiple products per shipment
- DDU induction rates are much lower than standard ground rates

Source: UPS website, USPS website, FedEx financial filings, client fulfilment economics, Stern School, Port of LA/LB, TandLA model estimates

What does this mean for transportation? We're going to go to **Exhibit 23** and walk through how the e-commerce change is impacting each transportation provider. Truckload is the biggest segment of transportation in North America and it's built around the old retail model. There's truckload volume into and out of DCs and even truckload with multi-stop for smaller stores outbound.

Exhibit 23: Shifting Volume Implications – Truckload and LTL

	Truckload	LTL
Market	• Built around "old" retailing model • Likely to lose volume – More fragmented inbound results in smaller shipment sizes – Less dedicated store delivery • Truckload is huge, so doesn't significantly impact market	• Gains from eCommerce – Smaller shipments to more DC's/ fulfillment centers benefits LTL – Home delivery of larger items (> parcel) a high growth market – Increase in drop ship could convert some LTL to parcel (a negative) • LTL much smaller than TL, and traditionally less focus on retail, so gains could be meaningful to overall LTL industry volumes
Carriers	• Highly fragmented, share gains can more than make up difference • Performance remains based on execution, not market	• Shift to LTL shipments to more locations will be positive • Some LTL carriers struggling to develop home delivery model – who will be successful at B2C?

Source: TandLA expertise

What happens when you go to e-commerce? The outbound costs are driving businesses toward local fulfilment, which is fragmenting volume and moving business out of truckload. The move to e-commerce is a net negative for the truckload industry, but what does that mean for truckload carriers? Interestingly enough a whole lot less than you would think, given how negative it is on the market. Even the largest carriers are only single digit percentage of the market and if you're smart, you can position yourself to take minimal impact. LTL is a big winner on e-commerce because that fragmented volume out of truckload, is driving more regional volume into LTL. A lot of the LTL carriers have been pushing toward trying to do last-mile delivery, but their big benefit has been going into regional DCs. This is all very positive for the industry and it's very positive for the carriers as well, it will be interesting to see what happens as they try to develop a final mile to a home option.

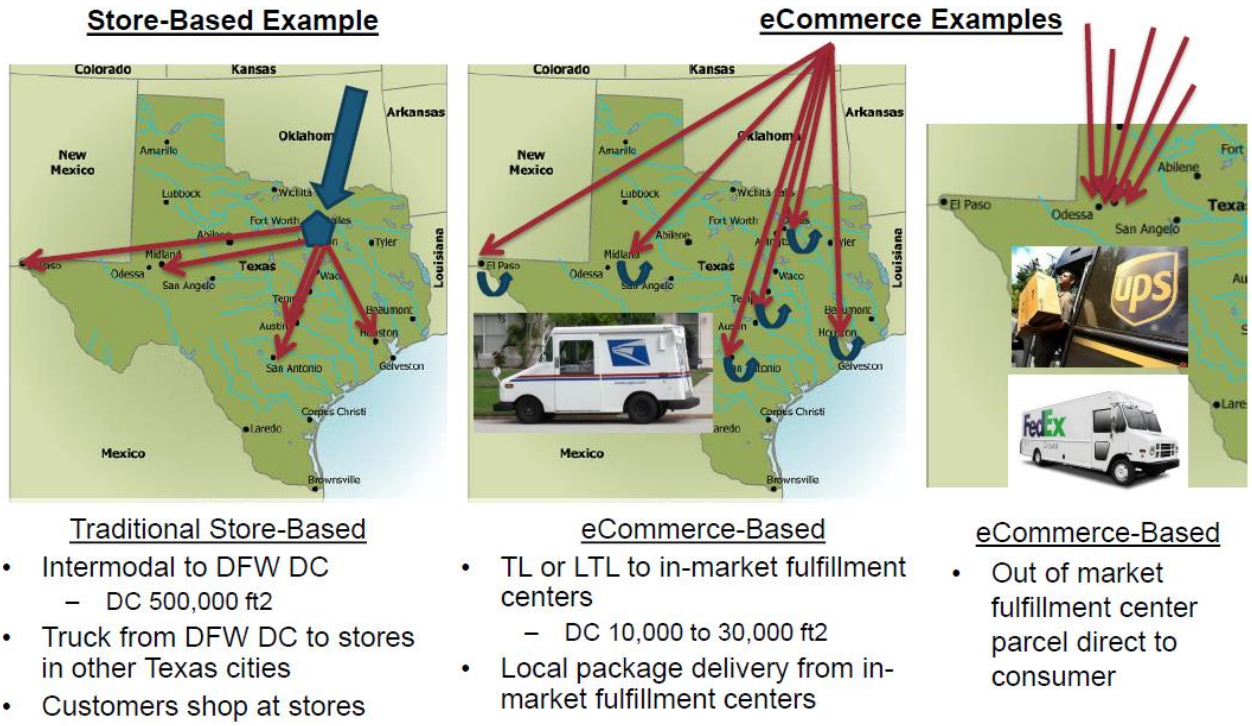
Moving to **Exhibit 24**, rail carload really doesn't matter. Most of the e-commerce transactions don't affect rail and even the ones that do end up moving the same way, having minimal impact. What does it mean for the carriers? Not a big deal for carload; although, rail intermodal is a different story. Rail intermodal is negatively impacted by e-commerce because the fragmenting of the volume moves business away from intermodal. A major retailer may have 5 to 7 store facing DCs, which fragments the volume, causing you to move away from the big major hubs, where intermodal runs. This volume is redistributed out into truckload, LTL, and package. In Canada, however, we've noticed that the impact is significantly less because the population is dispersed fairly linearly across the country, paralleling the rail lines and concentrated in the major cities where the intermodal terminals are.

Exhibit 24: Shifting Volume Implications – Rail and Intermodal

	Rail Carload	Rail Intermodal
Market	• Little to no impact on carload • Most commodities not B2C	• Likely to lose some volume due to eCommerce • International intermodal imports likely to be more fragmented – outside of core intermodal lanes • Increased transloading of ISO to domestic containers and OTR dry vans near ports • Domestic intermodal likely to be impacted as less volume between major markets more into secondary markets, closer to consumers • In Canada intermodal less impacted due to concentration of population around cities
Carriers	• Limited differences across railroads	• US impacted given dispersion of population and shift from large regional DC's to smaller in-market DC's • Canadian roads impacted less

Source: TandLA expertise

Exhibit 25: Shift to Market-Based DCs



Source: TandLA expertise

Exhibit 25 explains how we really feel about intermodal. On the left, the traditional store model has large volumes come in via truckload (blue arrow). In this case, volumes come into the intermodal terminal in Dallas, from there it gets traded right over to the enormous DC, close by, and goes outbound for fulfilment to the stores. This is an example of a favorable model with the high volume full truckloads traveling via intermodal to DC and from the DC to the store.

The middle image is the Amazon style e-commerce model, with multiple local fulfilment centers. All of the sudden, you're shipping directly to a fulfilment center in small volumes (more likely LTL) and then, from the fulfilment center, packages go out to the local post office and then the post office delivers it but it fragments the volume. The right hand side of **Exhibit 25** shows the non-amazon small retail model. These small businesses do not have DCs and are shipping a lot of volume via drop ship, which is a net negative for intermodal.

Parcel carriers are obviously experiencing surges from e-commerce. Increased volume is only a good thing if a company can handle it. We saw the large parcel carriers scrambling to handle the massive volume surges back in 2016, ultimately leading to increased labor costs and missed earnings targets. E-commerce is a very high cost business for the parcel carriers especially with fragmented shipments and Individual deliveries. Their business is predominantly made to serve B to B, not B to C even though they do a lot of it. Moreover, e-commerce has the density problem so they put dim pricing on ground first and then ended up having to put dim pricing on the Parcel Select products as well.

Exhibit 26: Parcel Volume Surges

	Integrators	Alternative Small Package
Market	• Volume increases are good and bad – Significant volume increase – High B2C makes delivery economics worse – High seasonality and spikes (how much capacity to invest in?) • Love/hate Amazon relationship • Move in US to put home delivery on USPS	• Small companies focused on eCommerce space designed for B2C • Typically regional • Big upside growth • Often high customer concentration • Some have high reliance on USPS for delivery • Typically have lower cost structure than integrators
Carriers	• B2C likely to continue to grow for major integrators despite handling lower share of Amazon	• Many different models • Have to develop long-term sustainability (not Amazon insource)

Source: TandLA expertise

Amazon has been developing its own transportation capabilities and in many ways they have become a 3PL. If a retailer or a brand label sold their product through Amazon, that product is processed through Amazon's distribution system and shipped out of one of Amazon's warehouses. They are becoming an integrated transportation provider, not only for themselves but for other people. They have an NVO license to act as a forwarder and they've gained air cargo capabilities. They have a large private truck fleet, they're doing local delivery, and they're carving out new markets in various places. They've created their own alternative small package service as well and in many ways they're becoming a for-hire carrier for people who are running through Amazon. As we have at the bottom of **Exhibit 27**, they may be on their way to being the biggest 3PL.

Exhibit 27: Amazon's Transportation Capabilities

Integrators	Alternative Small Package
• Obtained NVOCC operating license for shipments from China to US • Added air cargo capacity through relationship with ATSG and DHL • Acquiring a private truck fleet to transport shipments between facilities • Developed several programs for final mile delivery – Amazon Flex (Uber-like) model – Use of local delivery companies – Fleet of branded delivery trucks for final mile delivery	• Amazon could follow a number of potential strategies: – Support Peak: Build guaranteed capacity to support holiday peak; other carriers will remain a core aspect of delivery network – Handle Amazon Business: Take control of shipments where density allows it beyond what is required for holiday peak; Support companies selling through Amazon marketplace – For-Hire Parcel Carrier: Leverage its own volume and capabilities to become full for-hire carrier

In many ways Amazon may be viewed as well on its way to becoming the largest 3PL in the world!

Source: TandLA expertise

Moving on to **Exhibit 28**, air freight carriers may win but only in niches. They're saying Amazon is not trying to make the low-cost supply chain. They're actually trying to make the highest cost supply chain that is also the highest service and because they have the volume that allows them to create a supply chain that others cannot replicate. Their cost of transportation has been going up faster than the company's growing, which is due to Amazon's guaranteed high customer service levels, which results in high value low turn items being moved via airfreight to uphold delivery standards. That increases costs a lot but for them it's for only the high value, low turn items where for everybody else it would be for everything.

Exhibit 28: Air Freight Carriers

	Air Freight	Barge
Market	• Grounded air freight networks are participating in eCommerce by doing line haul, sort and delivery for larger items (e.g., seasonal charcoal grills) • Extend two-day network Nationwide for B2C • Increased de minimis values in 2016 should increase eCommerce imports	• Little to no impact on Most commodities not B2C
Carriers	• Forward Air, other grounded air freight providers? • Providers to Amazon Air	• No differences across barge lines

Source: TandLA expertise

Exhibit 29 dives into Warehousing and distribution, which has been a big positive from e-commerce. The push has been in two directions. Amazon is making the push towards very large distribution facilities. For a company with the volumes that Amazon is handling, it makes sense to have large distribution facilities; however, these large facilities don't work for everyone. For a long time, the smaller distribution centers, with lower ceiling and less square footage that, have been out of favor. In an e-commerce world, where you're picking by hand and handling small volumes in a local market, a facility that doesn't have a high ceiling and isn't very big is preferable. As a result, there has been a big push into those older, smaller warehouses as well.

Exhibit 29: Warehousing and Distribution

- eCommerce typically requires more warehousing space than brick and mortar stores
- Demand for new 1M+ sf. warehouses has skyrocketed
  - 120 built between 2010 and 2016
  - Totaled 141M sf. – average of 1.175M sf. per warehouse
  - ~30 more planned or being built
  - Most are near large population centers
  - Many built by Amazon
- eCommerce now driving demand for regional fulfillment centers
  - Shift in demand from a few large national DCs to many regional/local fulfillment centers (think Amazon)
  - Needs very closer to population to speed delivery
  - Limited land to build new
  - Older, smaller warehouses of all shapes and sizes back in strong demand
    - Historically abandoned in favor or mega-warehouses
    - Now adequate for eCommerce fulfillment -don't need high ceilings, and typically very close to population

Source: TandLA expertise

Exhibit 30 focuses on the technology providers. I can't emphasize enough, integrating the right technology to effective manage and resupply inventory levels is essential for large scale fulfillment operations. More companies have moved toward a more complicated fulfilment model, which has required them to upgrade their technology accordingly. This has been a very good thing for some 3PLs. Many of the traditional older players were not set up to handle individual items and manage inventories across multiple facilities; therefore, outsourcing to a 3PL has been a viable option for many.

Exhibit 30: Technology Providers

	3PLs	Tech Providers
Market	• eCommerce adds complexity – good for 3PLs • Retailers not used to "eaches" may outsource B2C fulfillment • Requirements of systems and processes very different for B2C • eCommerce start ups want to scale fast – often done more easily through a 3PL • Can be economic benefits to shared facilities • Requires re-think of inbound, too	• Strong positive from having to manage the complexity • Inventory and order management at the "eaches" level, not case or pallet • Integration between front end and back end, across partners • Management across more locations, including stores (OmniChannel) • Heavy returns component
Providers	• "Traditional" 3PLs frequently are not equipped to do eCommerce • Targeted eFulfillment providers – many have struggled to-date	• Likely to be some big winners • Major players and niche providers in the game

Source: TandLA expertise

With that, we're going to open it to questions.

Q&A

Dave Ross: Going off one of your last comments there Lee, you said that it's been good for some 3PLs, who exactly would that be? I mean, do you have examples of who those few leaders are and who is set up to handle the more complex e-commerce supply chains?

Lee Clair: If you flip back to **Exhibit 17**, we have an example of some of the companies that are specifically designed and set up to handle e-commerce fulfilment. Amazon fulfilment is still one of the leaders. Radio, which was recently acquired, is the old eBay commerce along with PFSweb. Newgistics is the number three provider of the postal delivery transportation in North America. Then Saddle Creek, which was an old line 3PL and traditionally heavily focused on grocery and some of the old pipe markets, actually has built an e-commerce business and is now a major player. There are a bunch of others as well. When someone is looking for a 3PL, it's very important that they actually understand what exactly the 3PL is providing. In most cases a 3PL will claim they support e-commerce fulfillment; however, they do not have the systems in place to efficiently support the entire e-commerce supply chain.

Bruce Chan: Yes, gentlemen thank you for a fantastic presentation. Just continuing on that theme looking at **Exhibit 17**, where you touch briefly on Amazon fulfilment. Obviously Amazon fulfilment has a large presence in the market, but in your experience have sellers been increasingly reluctant to entrust their fulfilment to, essentially what's, a competitor? I know FedEx and DHL have rolled out similar but vendor neutral fulfilment services, do you see a significant shift toward providers like these and away from Amazon because of this?

Steven Fox: I think it depends on who the retailer is. Amazon fulfilment is especially attractive to smaller and medium sized players because they're not as sophisticated and don't have the capabilities that they would otherwise have. The larger players look at Amazon as a partner but also as somebody they have to keep an eye on and so I think there's going to be that segment of the market that's probably looking for a viable alternative to Amazon fulfilment. The other thing with Amazon fulfilment is they get visibility of everything you're doing and as you probably know they sometimes will introduce their own products that become direct competition.

Lee Clair: Amazon is the quick and easy solution to get into e-commerce if you don't know what you're doing, you don't have time, and you don't have a lot of capabilities. The question is, after you do that, is that really where you want to be and what are the issues and is there another solution or multiple pieces you can put together yourself that can give you more comfort in what you're doing.

Bruce Chan: Great, thanks. Just as a quick follow up, I guess one of the reasons why FBAs initially had been so popular is because Amazon was really the most viable solution but it sounds like there may be others that are coming up and offering

competing solutions that are very viable. I don't know if you see share starting to accelerate away from FBA or not.

Steven Fox: I think we're seeing everything growing and things mixing and shifting. It's still the quickest, easiest way to start and grow in the easiest for low volume but there are lots of options and putting together multiple pieces from multiple places a lot more complex but gives you more options.

Bruce Chan: Perfect. Thank you.

Speaker 1: Great, thanks so much for doing the call. I had two questions, first you alluded to the shift from truckload to LTL and I wonder if you can size that. As you point out, it's probably not that relevant for truckload but since LTL is much smaller depending on how many loads shift it could be more material for LTL so curious if you have any way to size that. My second question is everyone, of course, is watching Amazon and you guys have talked about it but to get from where they are to where they want to be over the next two to three years what, if anything, do they need? You know, again there's obviously been the rumor around XPO recently but absent that, are there certain pieces that they don't have that they might need to do something externally versus internally? Thanks.

Steven Fox: I'll start with your second question first, one of the things about Amazon is they don't view investments as something that has to have an immediate financial return to them. I'd say all options are open to them, building it themselves is open, acquiring companies is open to them. It's hard to look within the company to totally understand what their strategy is going to be and how they're going to try and execute it because A) it changes and B) it's hard to know what their actual end goal is and, therefore, the best way is to get there.

Lee Clair: To build on that, I'd say they're not trying to make a low-cost network, they're trying to make a network that can not be replicated and has the greatest cost in service differentiation from their competitors. So, their transportation costs are going up much faster than the company even though they're getting scale economies. They don't care if they run cost up. I would say that as they keep growing capacity, the biggest issue becomes getting enough capacity in every aspect of the supply chain to keep the growth going? I would expect them do things based on gaining capacity more than anything else.

Moving on to your comment on LTL, we can probably do that but no body has paid us to, yet. In rough total numbers, if you look at truckload volumes now versus what they were before the great recession and look at LTL volumes now versus before the great recession LTL has done tremendously better in volume. To the extent that's coming from e-commerce it's exactly what you said LTL is so small compared to truckload that a small piece off of truckload has a big impact on LTL.

Speaker 1: Great thank you, appreciate it.

Speaker 2: Hi, thanks for the call. What inning do you think we are, in in terms of retailers and brands looking at outsourcing to a 3PL provider versus deciding to kind of go at it by themselves? Then, an extension to that is when you're talking to retailers

and management teams how realistic are boards in terms of the volume that they're going to get going to their e-commerce business and whether or not that then makes them wanting to invest internally versus again outsourcing to a 3PL? Just trying to get a better sense of how retailers are thinking about it.

Steven Fox: It's so hard to generalize because there's companies like TJ Maxx and Marshalls that have a very limited online presence but is going relatively well and there's others that obviously view an online presence as something that's really important to their futures and are investing significantly in it. Even among big public retailers there's different strategies but you know I think it's getting to a point where it's very difficult to not view e-commerce as something that you're going to have to have a strong capability in, in the future. The brick and mortar only model is going to be a tough go for most product categories. It's so hard to say what inning we're in because companies are doing all sorts of things, some of them are building the capability themselves, some of them are looking to outsource. Some of them outsourced it early on and then as they gain scale and understand it better then bring it back in house because they view it as an important skill and capability that they have themselves. I don't know if we can venture a guess as to what inning we're in but.

Lee Clair: I think Steve somewhat hit it, it's very different by company. Some of them are very far along and really know what they're doing, but many are still getting started. If I had to put a guess on it, I'd put us in third or fourth inning. The game's well under way but it's a long way from the end product.

Mike Baudendistel: Thank you. Just wanted to ask you, on your rail intermodal comments I thought you brought up some very good points about how rail intermodal could be at disadvantage with this e-commerce shift. I just wanted to see if you could put that in perspective of levels of rail service because it just sounds like your comments suggest that intermodal is just handicapped with regards to e-commerce because it's so heavily concentrated in large hubs like Dallas or Chicago. I wanted to get your thoughts on rail service and then secondly does this have the possibility of inhibiting rail intermodal as being the one area of rail that's really been the secular growth story if e-commerce continues to grow as it has?

Steven Fox: Yes, rail intermodal service quality has actually been great. The speed is pretty good, the consistency has been very good, and the service quality has minimal impact on e-commerce. The two things that are hurting intermodal with e-commerce is the fragmenting of the volume away from the major markets into places where intermodal doesn't have service. The second is fragmenting the volume from full container load to LTL. Furthermore, the LTL shipments are going to places where there isn't intermodal service, so it's not the service level. The service level is good, it's the network and where it goes that effects adoption rates.

If we look at the import piece, these come out of the big containers so that they can actually put it either into truckload or LTL to go to these larger secondary markets directly which again moves volume away from intermodal. That doesn't mean intermodal loses everything it just means they're losing on the margin. If you look at the total intermodal market share, it has not gained share versus

truckload in 20 years. It's grown, but it grows along with truckload and all we're saying here is intermodal may still continue to grow but e-commerce will create a headwind.

Mike Baudendistel: Great, thanks very much.

Dave Ross: All right, Samantha that's perfect. We went a little over because the call was so good but going to wrap it up now and thank Lee and Steve for joining us today, and presenting with some excellent insights.

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