The Promise of E-commerce
Impacts on Retail and Industrial Real Estate

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Executive Summary

Retail strategies have traditionally focused on delivering goods from global suppliers to brick-and-mortar stores at the lowest possible cost. These retail supply chains are made up of manufacturers, third-party logistics and transportation providers, and distribution center networks designed to enable goods to be delivered to stores in a timely manner. Agreements among manufacturers, distribution center operators and retailers have been based on the understanding that goods should arrive in time to support weekend store traffic, bolster sales and support in-store promotions. Two priorities dominate the traditional retail strategy:

1. Deliver the lowest-cost, landed price-per-unit to brick-and-mortar stores to support sales. Landed pricing refers to the cost of shipping goods from their origin to the final destination.
2. Deliver products at a rate necessary to support sales and promotions at those brick-and-mortar stores.

These priorities aim to ensure that the lowest-cost delivery and highest level of predictability can be achieved. This is the basis for the traditional promise between retailers and their customers: "You can always count on the product to be on the shelf in the store when you want to buy it."

An Evolving Relationship

Today, an evolution is occurring that will forever change the relationship between retailers and their customers. This new retail model, known as electronic commerce (e-commerce), consists of the following subcategories:

- Mobile commerce supported by mobile devices and tablets (m-commerce), and
- Emerging social commerce platforms that bring together advertising, shopping and selling in a social media environment (s-commerce).

In 2014, retail transactions occurring outside of brick-and-mortar stores accounted for 9 percent of the total retail "spend." Industry experts expect e-commerce sales to increase to 11 percent by 2018. While this may seem like nominal growth, some major retailers have already experienced e-commerce revenues accounting for 14.3 percent of their total revenue as of the second quarter of 2014. The top 43 Internet retailers in the U.S. reported $24.52 billion in combined e-commerce transactions during the second quarter of 2014, a 19.2 percent increase over the same quarter in 2013.

This shift toward e-commerce requires new retail supply chains. The two priorities that drive the traditional retail requirement — low total-landed costs and predictability — remain the same in this new environment. Goods that are now shipped directly to the customer's designated location require

the same level of predictability between the online order "click" and the "knock" on the door announcing its delivery. The promise of delivery made between the retailer and the buyer in terms of the time frame between click and knock clearly impacts retailers' real estate needs. The shorter the time frame between click and knock, the closer the inventory must be located to the final destination when the order is first placed.

The primary difference between the traditional retail delivery chain and the still-evolving e-commerce delivery chain lies in the complexity involved in delivering goods to the customer at any time and place, from any platform. Retailers today must establish fulfillment strategies that match their promise to the customer of low-cost or free shipping and reliable delivery, along with sales and inventory tracking processes that can be managed with ease. The key ingredient of this new form of commerce is the click-to-knock time frame and the constant pressure to compress the time required to meet a specific delivery expectation.

Real Estate Implications

This white paper addresses how e-commerce is continuing to grow and evolve, as well as how the new promises being made by retailers to their customers will continue to impact retail and industrial real estate investment and development. Two key areas of focus are:

- **The evolution of e-commerce logistics:** How retailers are adopting new strategies to deliver goods to customers from a variety of locations.

- **The global growth of e-commerce**: How retailers will continue to refine their inventory and real estate strategies by expanding virtual and brick-and-mortar store operations to reach a global audience of new customers.

Both of these areas have important implications for the types of retail and industrial real estate that will be in demand in the future as well as the optimal sizes and locations of those properties.

The Logistics of E-commerce

E-commerce retailers use numerous methods of inventory management, order selection, packaging and shipment for delivery or customer pickup. The overall time frame and costs associated with the "click" (on a computer or other device) and the "knock" (on the door at the delivery destination) correlates directly to the distance between the location where inventory is stored and where an item is delivered to a customer. Amazon can sometimes receive an order, "pick" the product, package and ship it within 20 minutes from "click to ship." (McCorvey, 2013)

The challenge of compressing the time frame between "click" and "knock" requires a seamless and well-executed effort among the following three elements:

- **Information Technology,** for order management and payment processing.
- **Operations,** for order picking and packaging.
- **Site Selection,** to ensure that logistics networks can support the delivery promise.

All stakeholders in the e-commerce process — manufacturers, retailers, IT providers, third-party logistics and transportation providers, distribution and fulfillment center operators and others — work together to create an effective delivery strategy to ensure customers receive their orders at the expected time and cost. A buyer must be assured, at the time he or she makes the "click," that the "knock" will come as promised.

Retailer strategies are focused on aligning their inventory, facilities, technology, transportation and delivery services so that transactions, payment and delivery occur seamlessly. All of these strategies center around increasing market share, growth and domination in the evolving and challenging retail industry.

There is constant demand to compress the "click to knock" cycle, so many companies move inventory to local storage facilities in order to offer same-day and next-day delivery. "Getting local" with inventory is critical to the success of the e-retailer and continues to be a requirement for a successful, web-based fulfillment program. (Tompkins, 2014)

Getting local also means that the retailer must have a real estate strategy which balances the cost of new space, more inventory, advanced order-management technology, faster shipping response times and lower shipping costs. These tensions must be addressed as part of any implementation strategy for an e-retail program.

Technology Driven

There are multiple alternatives retailers can use for storing inventory to fulfill customer orders. Implementing a technology solution that filters the destination

zip code, delivery time frame and the nearest, lowest-cost shipping method is a key strategic objective. However, getting to that point requires strong inventory control, robust "picking" protocols and rapid deployment of demands for "picks" within the selected warehouse or store. Inventory locations for order fulfillment may include:

- Shipments from a national fulfillment center, single location.
- Shipments from regional fulfillment centers, multiple locations.
- Shipments from local, metro or small fulfillment locations (fresh products).
- Shipments from selected stores as fulfillment centers.
- Shipments from all stores as fulfillment centers.
- Shipments to stores for customer pick-up at stores or at fulfillment lockers.
- Direct shipments from vendors to customers.
- Multiple shipments from vendors (marketplace partners) to customers.

Distribution Through Fulfillment Centers and Warehouses

Amazon currently ranks at the top of the Global 500 e-commerce in terms of sales volume. (Internet Retailer, 2014) Part of Amazon's success is its ability to fulfill orders within their network of warehouses and "promise" to ship products from their warehouse within 2.5 hours of a customer's online order "click." Amazon has invested in order-management algorithms that calculate the customer's location, desired shipping speed, product availability and inventory location. (McCorvey, 2013) Other companies are locating dedicated Internet fulfillment centers in strategic major markets to fulfill their Internet orders in one, two or three days. Orders placed "close in" to a metro area can be fulfilled either the same or next day. By carefully selecting sites for facilities and using the ground networks of major package delivery firms, it is possible to

reach the entire U.S. and part of Canada's population within a three-day delivery window.

Some companies, choosing not to make promises that are as compressed in the "click to knock" delivery cycle, choose to support both retail store replenishment and Internet fulfillment from one, two or perhaps three distribution centers. Many of these companies have very successful Internet programs, but do not try to compete for same- and second-day deliveries. Their websites compete with low-cost or free shipping, but transaction fulfillment expectations are specified in longer delivery time frames.

Distribution Using Brick-and-Mortar Retail Locations

Other companies are successfully using their stores and shelf inventory for local order fulfillment. Several large department stores have deployed this strategy and are now using receiving docks in their retail centers to pick up and ship orders for local delivery.

A final category of Internet retailers, both those with retail stores and those that exclusively operate virtual stores, are using their own Internet programs and fulfillment strategies while also entering into agreements as marketplace partners with other Internet providers to increase visibility and broaden the audience for their products. This is part of an emerging "order from anywhere, anytime, and fulfill from anywhere, anytime" strategy.

These marketplace partnerships are structured in many different ways. The trends suggest that access to an Internet e-commerce platform (e.g., Amazon, eBay, Alibaba and others) does not dilute sales. Rather, it gives the customer more options to enter a retailer's sales portal either through a branded website or another website that hosts the brand's products within their marketplace. As the examples on pages 13-16 illustrate, some brands have chosen to forgo their own online brand and operate entirely as a marketplace partner to the largest retailer's Internet program.

These are complex choices. All are grounded in decisions and commitments based on delivery and availability promises as well as transportation and real estate strategies.

Managing all these shipping options and allowing the customer to enter into a buying relationship with the retailer — whether by means of store, web, catalogue, smart phone, pop-up store or call center — is known as omnicommerce. The retailer manages the technology, inventory controls and visibility to "fulfill from anywhere" in response to an "order from anywhere." (Honeywell International, 2014) The key to a successful omnicommerce strategy is ensuring that all locations where inventory is held or displayed have timely and accurate inventory availability. Otherwise, "You don't have a hope of delivering even a basic level of satisfactory omnichannel customer experience." (Ashcroft, 2014) The omnichannel experience evolved from the first strategy in e-commerce that encompassed a multichannel strategy. The older term, multichannel, was the retailer's approach to reach customers via different channels based on convenience for the customer, but each channel was managed independently of other sales channels. The omnichannel user experience and interface remains the same, regardless of how the buyer interfaces with the seller. (Joshi, 2014)

Distance and Dimension Matter

Most retailers use third-party transportation companies — primarily FedEx, UPS and USPS — to deliver goods to wherever the "knock" on the door occurs. However, niche delivery services abound in major metro markets where e-commerce providers are competing for same-day and next-day delivery to local customers.

The major providers offer delivery rates based on the distance the package travels within their network. The greater the distance traveled be-tween the fulfillment center where the inventory is stored and the designated delivery location, the higher the transportation costs and the longer the transit time. Pricing and rates are based on delivery zones, which are structured like the rings of a tree: the closer to the origin, the lower the cost and the faster the transit times.

It is in this segment of the supply chain where real estate and logistics intersect. Fewer warehouses result in longer delivery times and higher shipping costs. On the other hand, more warehouses for storage of inventory add real estate costs, but shorten delivery times and costs for retailers. To get it right, the company must align its fulfillment commitments with inventory and real estate strategies. Because multiple fulfillment centers add a layer of complexity to an order management system, retailers must develop their information technology, order and inventory management operations, and logistics network so that inventory picking occurs at the facility closest to the delivery destination.

For example, a single fulfillment warehouse in Central Ohio stores inventory for a national brick-and-mortar retailer and supports its Internet sales program. The warehouse is used for retail store replenishment, which occurs weekly for all national stores, as well as for picking individual packages for direct delivery to individuals who order online. This retail e-commerce program is built on a single fulfillment premise: to deliver goods to customers within 2-7 days of their distance from Central Ohio.

Another retailer operates two fulfillment centers: one in Texas and another in Georgia. This retailer supports regional stores from these two facilities while supporting an entire platform of e-commerce inventory from their Georgia location. Regional delivery is promised in 2-3 days while deliveries outside the region, which account for a large portion of the deliveries from this sporting goods retailer, are based on a 5-7 day schedule.

This map shows the "rings," or zones, FedEx uses for timing package delivery from Central Ohio to the rest of the U.S. using both priority (higher cost, faster transit) and economy (lower cost, slower transit) options for package delivery.

FedEx Ground® Shipping From Columbus, Ohio
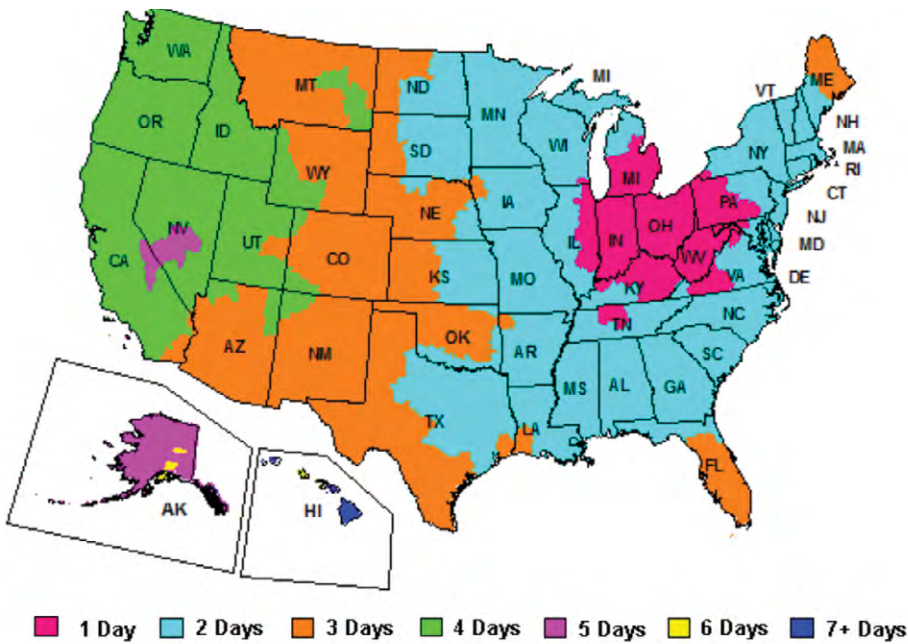
The maps on page 7 also show how an Internet retailer with four strategically located, dedicated fulfillment centers covers the entire U.S. population, and most of Canada's large population centers, within a 2-3 day "click to knock" cycle using FedEx's priority delivery program. Longer delivery times with lower costs could be achieved using the FedEx Economy shipping alternative.

FedEx Freight® Priority Shipping From
Lehigh Valley, Pennsylvania
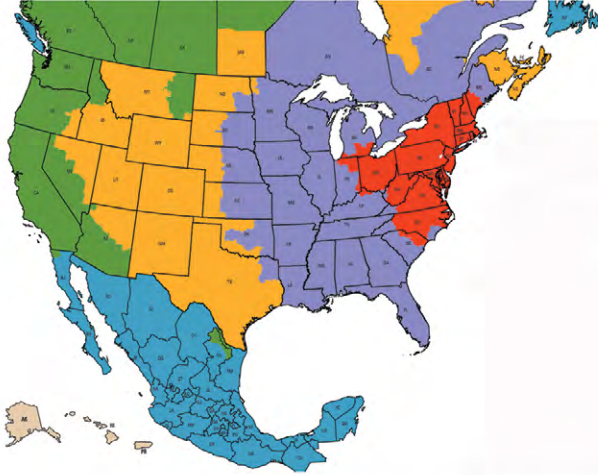
FedEx Freight® Priority Shipping From Atlanta
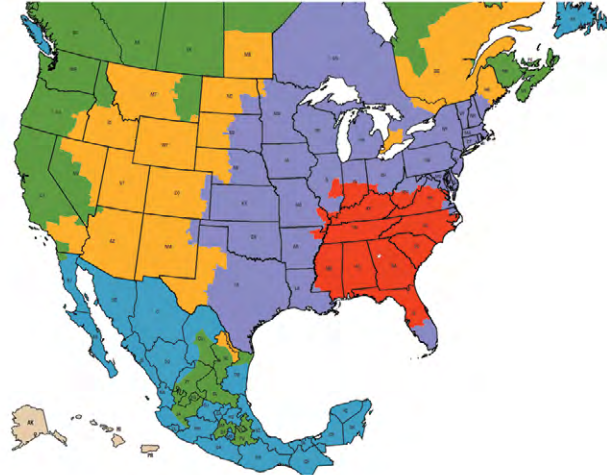
FedEx Freight® Priority Shipping From
Fort Worth, Texas
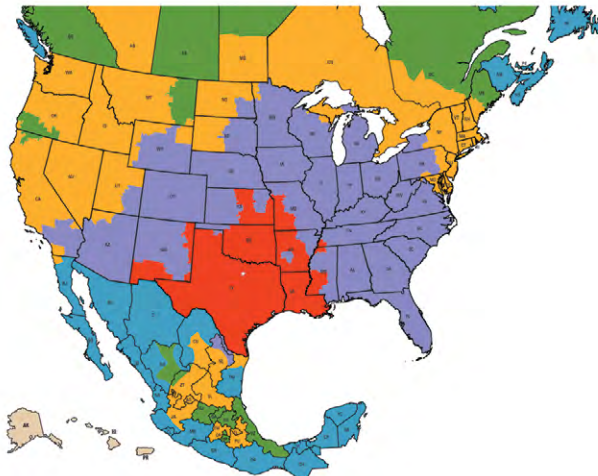
FedEx Freight® Priority Shipping From Phoenix
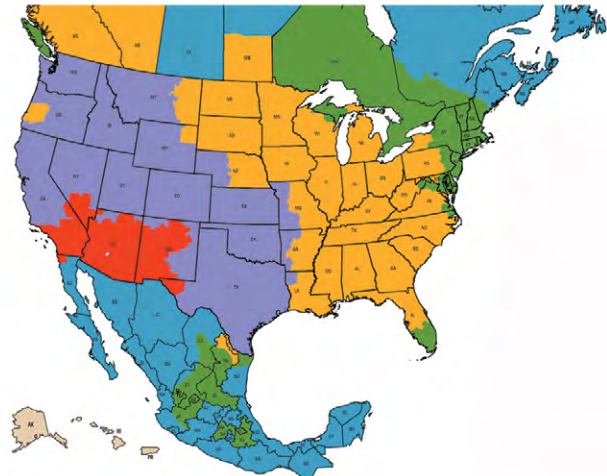
SERVICE STANDARDS

■ 1 Day   ■ 2 Days   ■ 3 Days   ■ 4 Days   ■ 5 Days

■ Contact Customer Service for service to Alaska, Hawaii and Puerto Rico

Source: FedEx Service Maps, January 2015 Ground

Amazon's U.S. Distribution Centers

Source: Ecommerce & Auction Site News, "Amazon Fulfillment and Distribution Center Locations Map," Jan. 26, 2014

In the U.S., FedEx and UPS shipping costs have historically been calculated by gross weight in pounds — a pricing model that can become unprofitable for freight carriers if the amount of space a package takes up in a truck, aircraft or ship is disproportionate to its actual weight. Both UPS and FedEx are now adopting a new delivery pricing model for all package deliveries based on "dimensional weight"– a calculation that takes into account how much space a package occupies in the delivery vehicle (length, width and height), not just how much it weighs. Traditionally, dimensional weight was used by the air cargo industry, commercial airlines and truck carriers to calculate delivery costs. Now UPS and FedEx are using similar dimensional calculators for domestic and international shipments. Although packages measuring less than three cubic feet are exempt from this new pricing model, shippers will always pay the greater of the actual or the dimensional weight for larger packages. Under the previous system, for example, a box of paper towels weighing 5 pounds would only be charged for its weight. But, because a box sized 10×14×24 inches takes up much more space than smaller and heavier boxes, this same shipment would be billed under the new formula as if it weighed more than 20 pounds.

$$\text{Dimensional Weight (lbs)} = \frac{L \times W \times H}{166}$$

L = Length in inches
W = Width in inches
H = Height in inches
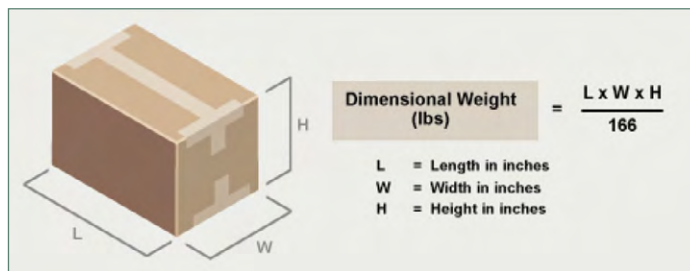
Source: United Parcel Service, www.ups.com, January 2015

This shift in the shipping rate structure will have two impacts on the e-commerce sector. First, it will push retailers to reduce package sizes, not just weight, to cut shipping costs. Second, manufacturers will be pressured to reduce the size of their product configurations in order to decrease both their weight and size to save on shipping costs.

Sales Channel Strategies

The number of fulfillment locations and type of technology integrated for order and inventory management must support the business strategy and delivery time frame within the fulfillment process. The number of locations and the speed of response and delivery must all be part of the business decision, before a retailer makes delivery promises or even publishes a website.

While Amazon clearly dominates the market given the sheer number of its fulfillment facilities, companies like Door to Door Organics, a web-only retailer of organic products and groceries, delivers fresh food using its own, dedicated delivery trucks to consumers in 11 states and approximately 30 medium-to-large cities. The company's five supporting warehouses range in size from 10,000 to 25,000 square feet, and its operational model has been structured to deliver orders only to certain areas on specific days each week. This allows their dedicated drivers to fulfill a larger set of orders in one area on a given day, with the average driver delivering orders up to 65 customers along one route each day. (Zaroban, 2014)

Brick-and-Mortar Stores as Local Fulfillment Centers

The traditional store-within-a-mall or standalone facility typically receives goods from vendors and regional distribution or replenishment centers at its receiving dock. Today, some stores are also using their retail space for order picking, packing and shipping to fulfill local orders for next-day delivery. "Fulfillment from stores" is the ultimate "get local" strategy.

Fulfillment from stores allows a retailer to leverage store inventory to support e-commerce. This strategy requires a robust inventory control program and technology filters that:

- Correctly and quickly review the delivery destination.
- Select the inventory from the closest store to the delivery point.
- Trigger a picking activity from store inventory to be moved to the shipping center for next-day or, in some cases, same-day delivery.

Retailers understand that "in-store fulfillment" is an order for a product selected from current inventory at a local store for local shipment to a customer. (Salerno, 2014) This strategy, which turns a brick-and-mortar store into a mini-warehouse, does not require new investments in real estate. However, many of the same retailers that have a successful fulfillment-from-store model also supplement this strategy with a dedicated local/regional e-commerce fulfillment center. This allows retailers to maintain stock in a store and accelerate re-stocking to ensure that sales are not lost because of low inventory for traditional, walk-in customers.

Local Fulfillment Examples

The ultimate advancement in "getting local" is Uber's dinner-delivery pilot program in the Los Angeles market. Using an Uber smartphone application, customers in certain areas of Beverly Hills and West Hollywood can place a dinner order from selected local restaurants and have a driver drop off their meal curbside, akin to a local taxi service for door-to-door deliveries from retailers to customers. "Uber-FRESH" is also testing a "Corner Store" program in Washington, D.C., that delivers convenience store items. (Kosoff, 2014) In New York, Uber offers a rush delivery service that uses couriers on foot and bike messengers to transport packages and other items from point A to point B.

Both Macy's and Bloomingdales department stores are piloting a same-day delivery program in Chicago and seven other markets launched by major U.S. mall operators, such as General

Growth, Simon, Macerich and Westfield. (Elejalde-Ruiz, 2014) The service is being provided by Deliv, a start-up delivery company that uses "crowdsourced" drivers and offers same-day, local delivery for in-store purchases at selected malls for a fee of approximately $5.00 per delivery. "Crowdsourcing" is a phrase coined in 2005 by Jeff Howe and Mark Robinson, editors at Wired Magazine, to describe the practice of asking a large network of individuals online to gather information, come up with ideas, develop new technologies, raise money or perform other services using an "open call" format. (Howe, 2006)

Macy's operates nine distribution centers to support retail replenishment, e-commerce fulfillment and in-store fulfillment from key stores within its and Bloomingdales' retail centers. Macy's expanded its operations for in-store fulfillment from 292 to 500 stores in 2013 and will use all 840 of its stores to support future omnichannel fulfillment from local stores.

Belk, a regional department store chain in the Southeastern U.S., operates three distribution centers to support inventory replenishment to its retail stores and one fulfillment center dedicated to support its e-commerce program. Belk uses in-store fulfillment and in-store pickup for customers ordering products through the Belk Internet portal.

In Denver, Wal-Mart is piloting "click-to-collect" — a concept that enables customers who order from the store's website to pick up their order from a nearby Wal-Mart store. The store calls the customer when his or her order is ready and provides instructions for pickup at a designated location outside the store. A touch-screen kiosk at this location then alerts Wal-Mart staff to transfer and load the ordered goods into the customer's car. (SC Digest Editorial Staff, 2014)

Internet search giant Google is piloting an e-commerce delivery program called Shopping Express that delivers goods within a few hours of an order being placed online. Shopping Express also allows the customer to combine multiple purchases into a single order for delivery and to select the most suitable timeframe for delivery.

Inventory Visibility

Success of in-store fulfillment depends heavily on inventory visibility. One way to monitor and control inventory at brick-and-mortar stores is to use a sophisticated item-tracker or radio frequency identification tag (RFID) on each product. After real-world testing of these technologies, however, large retailers, such as JC Penney and Wal-Mart, discovered that what looked good on the drawing board didn't always work well in warehouses and stores. (Bjork, 2014) Nonetheless, apparel group Identix, parent of the Spanish retail chain Zara, is rolling out RFID throughout its signature stores to provide better insight into its inventory and replenishment needs. Identix also seeks to reduce the time needed for replenishing in-store inventory as well as to save money on manpower costs for in-store shelf inventory by automating this task. Using RFID technology, retailers such as Identix are seeking real-time information about the number of products available for picking. Another objective is greater transparency and control over inventory, such as product colors and available sizes by store location. (Fiorietta, 2013)

Other technologies that are being studied to enhance a customer's store experience, control a retailer's inventory or manage in-store fulfillment include:

- Near field communication (NFC), a technology that enables smartphones and other mobile devices to exchange information through short-range radio transmissions. NFC is now being used by retailers for their customers' in-store credit card payments, for identifying customers as they shop in their store and for relaying advertisements and other messages to those shoppers. (Davis, B., 2014)

- iBeacon, a "micro-location" feature of Apple's iPhones since 2013, can notify other devices of your presence as far away as 100 feet using Bluetooth low energy (BLE) radio waves. Today BLE technology is used primarily by retailers as an advertising medium and to push promotions to customers' smartphones. Shoppers at a grocery store, for example, could peruse weekly specials

and virtual product coupons as they walk the aisles. If shoppers have a grocery list on their phone, BLE could also transform that list into a personalized map to help them quickly locate items in the store. Retailers are also using BLE technology to collect information about their customers' shopping habits and buying frequency, then using that data for loyalty programs. Some believe this technology will bring about a paradigm shift in the way retailers and brand advertisers communicate with consumers. (iBeacon Insider, 2014)

Marketplace Strategies

One way retailers can grow their Internet sales is to enter into marketplace relationships with other Internet sellers. Virtual e-commerce providers (e.g., Amazon and eBay) and major brick-and-mortar retailers who sell goods over the Internet (e.g., Wal-Mart, Target, Lowes, Home Depot, Ace Hardware) rely on such partnerships to bolster sales and provide shoppers with options for a broader array of products from disparate sources. Many companies prefer to "go it alone," running their own brick-and-mortar and Internet operations so that all sales and transactions are uniformly branded.

Other companies manage both their retail and e-commerce operations themselves while also selling or consigning their products to other Internet providers specializing in web hosting and e-commerce services.

Hosted transactions come in many forms. For example, both Amazon and Barnes & Noble run their own web sites and maintain product inventories in various locations to support their web sales. Both companies also have many marketplace partners whose products can be bought through their respective websites. Yet neither Amazon nor Barnes & Noble keep their partners' items in inventory. Instead, they host their partners' e-commerce operations and serve as a payment gateway for related sales transactions. Once a sale takes place, Amazon and Barnes & Noble notify the applicable partner to ship goods from that partner's warehouse to a specific customer location.

In other cases, small businesses that have no appetite for the technological complexities of operating an e-commerce site themselves can sell or consign inventory to Amazon, eBay, Wal-Mart or Target to market their company's wares. This option not only provides a global audience of potential buyers for the smaller firm through the host's international e-commerce platform, it also gives smaller companies a greater sense of security when it comes to deterring would-be cyberthieves from hacking an e-commerce site. Even with a portion of every retail sale going to the marketplace host for providing e-commerce services, a boost in new sales volume for a small business can offset the costs of access to a host's global buyers and sophisticated inventory control, fulfillment, shipping and loyalty programs.

The Last Mile: Home Delivery

Retailers who promote e-commerce are keenly aware of a gaping security hole in the package delivery business, especially for home delivery. Packages that are merely deposited on doorsteps by transportation providers are tempting targets for criminals who steal and resell the contents of those parcels.

In certain metro areas, some companies have tested secure lockers at third-party stores (e.g., CVS, Wal-Mart) as an alternative pickup location for deliveries. When a delivery is imminent, an e-commerce provider typically sends an email to the customer with details about the delivery, such as the location and locker combination.

Another option being explored for secure home delivery is having a standalone parcel depository installed or located on the front steps or porch of a residence. This type of depository is usually a large capacity, weatherproofed lockbox tethered to the steps, porch or patio. (Sky-Mall, Parcel Drop Box)

Doorman, a logistics startup serving the San Francisco area, charges a nominal fee to accept online purchases for residents and then deliver those parcels at appointed times — even as late as midnight, seven days a week. Doorman gives

e-commerce shoppers a new shipping address whenever they shop online, which the customer then uses as the "ship to" location for product delivery. Once a package arrives at Doorman's depot, customers use the Doorman app to schedule a specific time for delivery to their front door. (Doorman, 2014)

The battle between major retailers to make the "last mile" experience nearly instantaneous for customers will accelerate during 2015. Demographics will continue to play a major factor in choosing a location for regional distribution centers. (Cushman & Wakefield, 2015a)

Industrial Space Demand and E-Commerce

More companies today are factoring their promises for fast delivery and "click to knock" strategies into their commercial real estate strategies. The boom in e-commerce has created significant demand for new industrial space, often in markets based on population and Internet usage, rather than store replenishment requirements. These new facilities, which are vastly different from traditional distribution centers that only support regional sales replenishment, are being built specifically to support high-volume package through-put. They require higher ceilings, more parking, additional dock doors, restrooms and mezzanines with greater density of floor space for picking. When selecting a site for new industrial space, companies are also seeking a location near major airports, waterways and ground transportation networks for efficient shipping of goods and close to mass transit so their employees have easy access to and from work.

In 2013, online sales reached an estimated $263.3 billion and are projected to grow to $370 billion by 2017. (Striffler, 2014) Total industrial leasing activity mushroomed to 444.1 million square feet in 2013 — one of the strongest years for industrial leasing since 2005. According to Striffler, "Demand for newly built, large distribution centers that cater to e-commerce has been particularly robust in this recovery and new industrial construction activity has been rising. In the past four years, the warehouse sector has delivered 170 million square feet of new development to satisfy this demand."

Striffler also noted, "Clearance height in the new facilities is often 36 to 40 feet to accommodate two mezzanines for picking and packing. Industrial projects with clear heights greater than 30 feet account for 78.3% of the total industrial product under construction."

As 2014 drew to a close, the U.S. industrial vacancy rate dropped to its lowest level in nearly 14 years. 2014 ended with an overall industrial vacancy rate of 6.8 percent — the lowest since the first quarter of 2001 — driven partly by the growth in e-commerce and "the ongoing evolution of supply chains as businesses seek to distribute goods across the country more efficiently." The industrial vacancy rate is also projected to continue declining to 6.3 percent by the end of 2015. (Cushman & Wakefield, 2015b)

Key markets offer cost and logistics advantages for large fulfillment centers. Since 2010, demand for construction of distribution and fulfillment centers has been strongest in these states:

- California: 29.36 million sq. ft.
- Texas: 17.80 million sq. ft.
- Illinois: 13.07 million sq. ft.
- Pennsylvania: 11.75 million sq. ft.
- Georgia: 11.21 million sq. ft.
- Ohio: 10.53 million sq. ft.

Approximately 11.1 billion square feet of industrial space exists within 69 major metropolitan markets in the U.S. (Brown, 2014) According to Brown, "as much as 80 million square feet of potential demand will be entering the marketplace over the next couple of years from space users seeking e-commerce or mega-bulk distribution space." He noted that, of the volumes of new industrial product in the development pipeline, "over 90 percent of this total is in the form of mega-bulk warehouse product of over 200,000 square feet."

While all eyes are on the mega-bulk distribution centers supporting e-commerce growth, there are parallel needs for parcel hubs, delivery centers and local, urban logistics depots (Jones Lang LaSalle, 2013) as demand grows for online fresh-food centers and same-day delivery services to consumers.

Examples

A DIY Tool Manufacturer, Self-Managing and Outsourcing

Traditionally, the do-it-yourself (DIY) industry has been controlled by big-box specialty retailers who keep materials, products and tools on their shelves to support the "weekend warrior." Inside the domain of the big-box retailer, many available tool lines support carpentry, welding, roofing, plumbing, fencing, grilling, cutting and pruning. DIY tools proliferate in the garages of America.

One manufacturing company's entry into this sector started with traditional late night "infomercials" showcasing product capabilities. This television marketing drove sales to the company's call center and built a loyal following of customers who sought the value and innovation offered by its tool line. The company now has multiple products which are sold in the following ways:

- In a direct-to-consumer channel from the company's own websites.
- Through marketplace partners.
- At traditional big-box retail storefronts.
- On websites controlled by the big-box brand.com program.

Today, the company operates three distribution centers located on the East Coast, the West Coast, and in Canada, which support direct store sales, infomercial sales and direct Internet sales. In addition, the company ships bulk products to the fulfillment centers of its marketplace partners, e-Bay and Amazon. Those partners fulfill sales through their own channels. The company also ships in bulk to the distribution centers of its largest big-box retail customers, where storefront replenishment and order fulfillment occurs.

Orders taken on the company website or through direct mail and phone responses are picked and shipped from one of its facilities, which are operated by a third-party logistics service. The company manages hundreds of SKUs (stock-keeping units) and uses FedEx Smart Post and USPS (the U.S. Postal Service) for home delivery and returns. All orders placed are picked and shipped the next business day from the third-party's facility that is closest to the delivery destination.

The manufacturer's partnership with the national third-party logistics provider gives the company the flexibility to expand into other facilities controlled by the third-party partner when growth or volume demands occur.

A Global Clothing Manufacturer Partnering with Amazon

This well-respected company produces an excellent brand that is widely purchased in traditional retail stores in the U.S. and Canada. The brand does not operate any of its own stores, but rather sells product to big-box, small and niche retailers. This has allowed the company to expand the brand as well as the locations where its product can be purchased. The company conducted internal meetings to determine a strategy for a web-based sales program. During this evaluation, it considered the following elements:

• Overall costs of implementing an internal Internet sales platform.

• Real estate requirements relating to inventory deployment.

• Payment processing and return operation requirements to support a stand-alone Internet sales platform.

After an in-depth review and analysis, it was determined that because of the costs associated with the start-up and operation of an internal web-based retail program with all the necessary best practices, payment and fraud protection, entering into a contract with a marketplace partner was the most cost-effective approach. The company elected to enter into a partnership with Amazon. Amazon will act as the host of the company's primary Internet program and will supplement sales to big-box retailers, through its big-box storefronts and new direct Internet sales programs. Not only was the cost to enter these programs and partnerships lower overall than developing its own internal Internet program, but the company was able to gain massive global and domestic exposure through the Amazon partnership programs.

Growth in the range of 160 percent, year-over-year, was achieved in the early launch of this e-commerce partnership. Growth today, two years later, is still over 100 percent year-over-year, with new outlet partnerships being added that will continue to increase exposure of the manufacturer's brand to new customers and prospects.

Perhaps one of the most significant opportunities of the partnership with Amazon is the increase in brand exposure to international customers. The manufacturer now ships goods in truckload/container volumes to Amazon's distribution centers in Europe and Canada, and will soon begin shipping to Mexico. The company also ships in bulk volumes to Amazon's new facilities in China, from the company's China-based manufacturing centers. This has resulted in a higher level of global growth than what could have been achieved without the marketplace partnerships and global Internet retailers.

While this example does not have a direct real estate outcome, the manufacturing company does contribute to the demand for real estate and inventory management at Amazon's facilities across the U.S. and throughout the world.

A Third-Party Logistics Provider with Multiple Clients

One mid-tier third-party logistics service provider with both East Coast and West Coast footprints has added over 1 million square feet of distribution space in the past year to accommodate the demand for services and volume of new through-put driven by its e-commerce retail clients. This real estate expansion is being driven largely by e-commerce, as well as by new retail clients who want to add new distribution space without having to "go it alone" or add their own facilities.

The result for this third-party provider:

• Strong growth in new order processing and shipping services.

• Increased import processing volumes.

• New product lines requiring multiple services to support retail, distribution, inventory control and e-commerce.

All of this new and expanded activity has a direct impact on industrial real estate on both coasts. Based on current projections, this company is anticipating expansions into several key inland markets.

A Third-Party Logistics Provider with Exclusive Clients

A third-party logistics service company located in central Ohio manages inventory and supports store replenishment and Internet fulfillment for two large retailers. One retailer has several hundred stores, while the second retailer has nearly 2,000 stores nationwide. All inventory storage and order picking for stores and individual orders, along with all outbound logistics activities in support of direct and e-commerce activities, are handled from this single location.

Order fulfillment for e-commerce and store replenishment occurs in a next-day time frame if the delivery is within 500 miles of the distribution center. Deliveries to stores farther away take place weekly to allow for pre-weekend restocking for sales and promotions. Internet sales to destinations outside the 500-mile radius are supported in several ways.

• Internet orders are accepted and delivered based on the carrier's distance-sensitive rules in the shopping cart, so that delivery by FedEx or USPS (U.S. Postal Service) aligns with the distance from the fulfillment center.

• Orders for West Coast delivery are loaded into trucks with team drivers. The trucks and packages then make several "milk runs" to regional FedEx or UPS centers to drop off packages that UPS and FedEx consider to be in their next-day zone of coverage. By using a team of drivers to cross the country and skip over several "zones" in the package carriers' systems, this third-party logistics provider can deliver goods at a lower cost and more quickly. This process is known as zone-skipping. Implementing such a program requires enough volume to justify the cross-country truck costs, but it is an effective solution for managing costs and compressing delivery times.

Store replenishment across the country is accomplished using trucks that drop partial loads at stores or with outsourced pool agents, who provide local transportation "runs." These agents are responsible for the "last mile of delivery" in this distribution strategy. The companies move goods from their facilities to local stores in a metro region. The key ingredient in this store replenishment strategy is having the orders picked on Monday for the most stores furthest from Ohio, so that the stores in the most distant metro regions receive their orders by Thursday for stocking of weekend sales or promotions.

The ability to fulfill and replenish from a single location provides a single real estate solution for both e-commerce and storefront support.
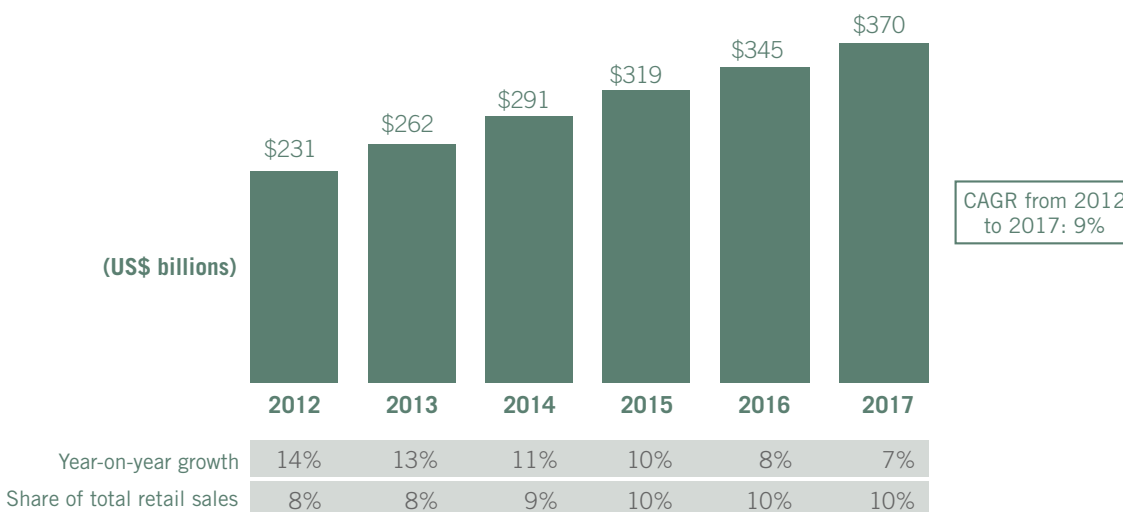
The Promise of Growth

Retailers who aspire to "go global" with e-commerce sales face potentially big rewards as well as accompanying risks. There are complex international logistics as well as trade and transportation challenges that are far more difficult to navigate than with U.S. or North American shipping. Yet the prospect for growth and profit from sales overseas is exceptional. In England, for example, consumers purchased nearly one-third of their clothing, furniture and appliances online in one month alone. (Hyde, 2014)

Projections for e-commerce and m-commerce sales for the U.S. market are just as eye-popping:

• E-commerce and m-commerce are estimated to make up 9 percent of all U.S. retail sales in 2014 and 11 percent by 2018. (Douglas, 2014)

• Domestic e-commerce growth is expected to increase between 2012 and 2017 at a compound annual growth rate (CAGR) of 9 percent. (Forrester Research Inc., 2014)

Forecast: U.S. Online Retail Sales (2012–2017)

CAGR from 2012 to 2017: 9%

(US$ billions)

	2012	2013	2014	2015	2016	2017
	$231	$262	$291	$319	$345	$370
Year-on-year growth	14%	13%	11%	10%	8%	7%
Share of total retail sales	8%	8%	9%	10%	10%	10%

Source: Forrester Research Online Retail Forecast (2012-2017), Forrester Research, Inc.

• During the first quarter of 2014, U.S. consumers spent $56.1 billion via desktop-based e-commerce, a 12 percent increase in sales over the same period in 2013. (comScore, 2014)

- U.S. consumers spent another $7.3 billion via m-commerce in the first quarter of 2014, a 23 percent increase over the same period in 2013. (comScore, 2014)

- To qualify for free shipping, 58 percent of consumers added more items to their online shopping carts, while 83 percent were willing to wait a few extra days for delivery if shipping was free. (Callard, 2014)

Internet Sales Will Continue to Grow

Major storefront retailers have invested in a strong online presence to capture growing online sales and revenue. For example:

- Wal-Mart increased Internet sales by 30 percent during 2013, with more than $10 billion in total online sales. The company's online sales in Canada increased 145 percent during the fourth quarter of 2013. Wal-Mart's China Internet sales (with web-only retailer Yihaodian, which is 51 percent owned by Wal-Mart) increased more than 100 percent year-over-year. In the United Kingdom, where Wal-Mart owns the Asda supermarket chain, online sales grew 19.7 percent during 2013. Asda added 87 click-and-collect sites in the U.K. via a program that allows customers to place orders online and pick them up at their local stores or at other locations. (Davis, D. , 2014)

- Luxury retail chain Nordstrom reported that web sales increased 33 percent during the first quarter of 2014. Nordstrom is investing $3.9 billion to improve in-store and online growth, with most of the spending in their direct sales channel. Direct sales during the first quarter of 2014 increased 33 percent, up from $301 million in 2013 to over $400 million. Nordstrom's store sales reflected 3.3 percent growth, while web sales accounted for 14.2 percent of total sales compared to 11.4 percent for the same period in 2013. (Brohan, 2014)

- During the first quarter of 2014, Nike saw their web sales increase 70 percent, from $139.5 million to $237 million. E-commerce accounted for roughly 15 percent of Nike's direct-to-consumer sales. (Brohan, 2014)

- Home Depot, the do-it-yourself "big box" retailer, reported that its e-commerce sales increased by $232 million, or 40 percent, during the first quarter of 2014. This growth followed a 50 percent increase in online sales during both the third and fourth quarters of 2013. Online sales accounted for 4.2 percent of Home Depot's total first quarter 2014 sales. The retail chain launched its "Buy Online, Ship to Store" service in 2013 and, during the first three months, generated an estimated $100 million in online revenue. (Cassidy, 2014)

- Target Corporation's online sales increased 30 percent during the third quarter of 2014, and the company expects 40 percent growth in the fourth quarter of 2014. Target has established its ship-from-store program at 136 stores to test local fulfillment operations. The company also introduced a mobile application called Target Cartwheel to provide online shoppers with advance notice of in-store and Internet discounts. For orders over $50 placed online between October 22 and December 22, 2014, Target also offered free shipping to help drive increased order volumes. (Davis, D., 2014)

Customers are becoming increasingly comfortable with buying goods on their smartphones. M-commerce sales in April 2014 grew a whopping 116 percent from the same period the previous year.

According to Chris Mason of Branding Brand, consumers used their smartphones during April 2014 to buy $11.9 million in goods at 18 major retail centers, compared with $5.5 million in 2013. For many Americans, smartphones are now the primary channel for accessing the Internet and e-commerce websites. "Part of this is due to convenience and mobile's ability to reinvent the way we do things; another reason is because smartphones are the one device we have with us at all times," said Mason. (Siwicki, 2014)

Global e-commerce sales worldwide through 2017 are projected to reach $2.357 trillion, with a CAGR of 14.8 percent.

## B2C E-commerce Sales Worldwide By Region (2012–2017)
(In billions)

	2012	2013	2014	2015	2016	2017
Asia-Pacific	$301.20	$383.90	$525.20	$681.20	$855.70	$1,052.90
North America	379.80	431.00	482.60	538.30	597.90	660.40
Western Europe	277.50	312.00	347.40	382.70	414.20	445.00
Central & Eastern Europe	41.50	49.50	58.00	64.40	68.90	73.10
Latin America	37.60	48.10	57.70	64.90	70.60	74.60
Middle East & Africa	20.60	27.00	33.80	39.60	45.50	51.40
Worldwide	$1,058.20	$1,251.40	$1,504.60	$1,771.00	$2,052.70	$2,357.40

Source: www.eMarketer.com, January 2014

Note: Includes products and services ordered and leisure and unmanaged business travel sales booked using the Internet via any device, regardless of the method of payment or fulfillment; numbers may not add up to total due to rounding.

B2C E-commerce Sales Worldwide, (2012–2017)
(In trillions, percent change)
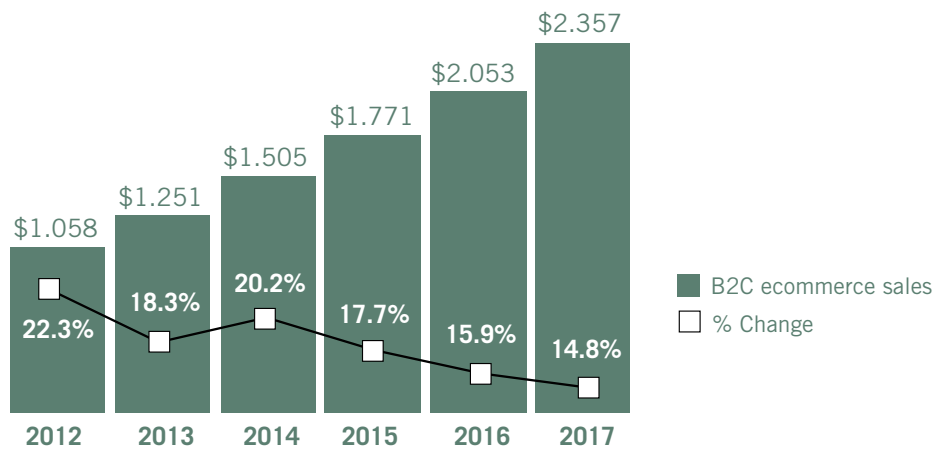
*Source: www.eMarketer.com, January 2014*

Note: CAGR (2012-2017) = 17.4%; includes products and services ordered and leisure and unmanaged business travel sales booked using the Internet via any device, regardless of the method of payment or fulfillment.

Expanding Markets and Brand Influence

The global marketplace provides significant growth opportunities for e-commerce providers seeking to expand their market and brand influence. According to Credit Suisse, China has over 558 million users, by far the most of any other country in the world. Increased Internet use outside the United States, and the potential for e-commerce sales, will drive more U.S. retailers to engage in global Internet trade.

Global Users and Shoppers (2014)

(Internet users in millions)

Country	Users
Brazil	107
Japan	109
India	243
U.S.	279
China	641
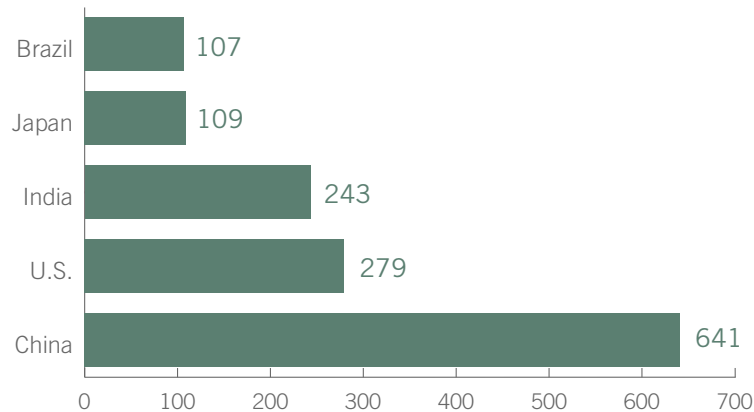
Sources: Internet Live Stats – International Telecommunications Union; United Nations Population Division; Internet & Mobile Association of India; World Bank

International Growth Challenges

Growing sales and revenue internationally is challenging for U.S. retailers because cross-border transactions must take into account:

- Foreign currency fluctuations.
- Payment methods.
- Technology interchanges.
- Fraud protection schemes.
- Taxes, duties and customs requirements.
- Product classifications.
- Customer returns, complaints and refunds for "ship to" country destinations.

Keeping shipping costs low at the package level can also present challenges. Several new logistics providers are now offering their services as "shipping aggregators." These firms collect shipments from disparate e-commerce providers in the U.S., consolidate the shipments for overseas destinations and then deliver individual packages through their foreign transportation networks.

For retailers, cross-border transactions over the Internet present other challenges, such as the potential for online fraud and the timeliness of deliveries to destination countries. A recent study conducted in the European Union (EU) found that 59 percent of consumers were confident about making a purchase within their own country, yet only 36 percent felt confident about purchasing from another EU country. Concerns about fraud, cross-border trade compliance, contract laws and non-payment are key issues that must be addressed before cross-border e-commerce can grow and expand. (Levy, 2014)

Global Internet Population and E-Commerce Growth Outside U.S. Will Drive U.S. Retailers to Cross-border Trade					
	North America	**Latin America/ Caribbean**	**Europe**	**Middle East/ Africa**	**Asia/Asia Pacific /Oceana**
2011 actual online population *(in millions of people)*	272.1	215.9	476.2	187.2	943.6
2014 projected online population *(in millions of people)*	292	255	500	241	1,033

Sources: Forrester Research Inc. projected (2014); Internet World Stats, actual (2011)

Amazon and Alibaba Lead the Way

To circumvent the complexities of international shipping and make selling online items easier overseas, Amazon introduced Fulfillment by Amazon (FBA). Open only to third-party sellers and marketplace partners, this program allows merchants to store products in shipping centers until orders are placed. As orders are received, Amazon packages and ships products directly to customers. In addition to shipping and handling, Amazon also manages customer service and returns. Sellers and marketplace partners are also able to leverage Amazon's shipping rates, which are among the lowest in the world because of Amazon's immense transaction volume, thereby lowering their transportation costs and "click to knock" timeframes. At the same time, Amazon provides sellers with a revenue calculator to help them determine the program's cost-effectiveness for their products. Another Amazon program called Global Export provides a process for certain types of products to be ordered from international locations if the buyer is in an FBA-supported country. (ChannelAdvisor, 2014)

In 2013, the number of active sellers participating in Amazon's FBA program rose 65 percent; 73 percent of participants who were surveyed admitted their unit sales on Amazon increased 20 percent since joining the program.

Alibaba — China's biggest e-commerce company that also held the largest initial public offering in history in 2014 — handled a total of $248 billion in transactions on its online sites during 2014, more than those of eBay and Amazon combined. Alipay, Alibaba's online payment platform, handled more than triple the amount of mobile payments processed by PayPal. (Osawa, 2014)

Alibaba's IPO and business operations stirred a great deal of interest among investors but delivered precious few details about how they intend to operate in the United States. Part of their strategy, experts believe, is to reach an estimated 50 million people of Chinese descent living outside their country and to provide Chinese locals with access to the world's best retail brands. These two factors, they say, are likely to expand Alibaba's global influence and have a ripple effect across the world's real estate markets.

Industry watchers believe Alibaba, unlike Amazon, will choose not to build fulfillment centers or manage inventory themselves. Instead, they surmise Alibaba will develop marketplace partnerships that "push" the responsibility for building and running fulfillment facilities, controlling inventory and processing goods onto their merchant partners. Alibaba would instead handle transaction and payment processing for orders placed on its websites.

If these projections are correct, more retailers would need third-party logistics (3PL) providers as well as "new options for fast and efficient fulfillment and delivery, which creates a tremendous opportunity for 3PL's that have their sights on the future." (Bonebrake, 2014) Alibaba's approach would also shift the business of running industrial centers and fulfillment logistics to its marketplace partners while creating new demands for industrial space to keep up with Alibaba's expected growth.

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