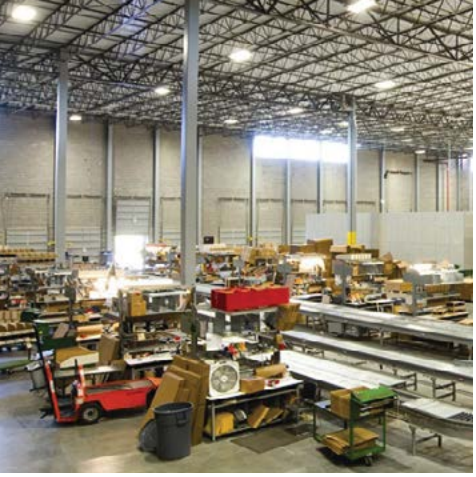

E-commerce Evolution: Considerations for Commercial Real Estate

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The Five Elements of E-commerce

Although businesses first began conducting electronic transactions via computer networks as early as the 1960s, e-commerce — defined as the buying and selling of goods and services over the Internet — truly began in the mid 1990s. Amazon.com, founded in 1994 as "Earth's largest bookstore," led the way, first by selling books online and shipping them directly to purchasers, before expanding into a company that now sells almost any product imaginable, almost anywhere in the world. Since then, Amazon, eBay and others have been shaping e-commerce into the fastest-growing retail network in the world. During the past three years, online retailing has been growing by an annual average of more than 18 percent globally, even as non-Internet sales have grown by only 1.3 percent annually.

Retailers and industry analysts have been focused on this phenomenon for much of the past two decades, as they watched Internet sales slowly but steadily cut into brick-and-mortar transactions. As they have adapted to this new sales venue, the introduction and widespread use of smartphones and tablets (mobile handheld devices) have dramatically accelerated the pace of change, requiring retailers to retool their merchandising and supply chain strategies multiple times.

The commercial real estate industry also has been watching this shift to Internet sales closely. Most industry professionals generally understood that growth in e-commerce would result in dwindling demand for retail space in malls and shopping centers, but few predicted that a new industrial facility called a fulfillment center would be created in order to ship an item directly to a consumer who had purchased that item on a touch-screen device that fit in the palm of her hand. Welcome to the 21st century.

The e-commerce concept and its impacts go well beyond retail and industrial space. Today, e-commerce appears to be a marriage between retail and industrial product types and industries, as well as Internet technology and devices, the transportation and logistics sectors, and inventory tracking and mechanical fulfillment systems. The complexities of e-commerce are just beginning to emerge, and professionals in all of these related industries are scrambling to adapt. By nature, e-commerce is a dynamic, highly integrated concept, so identifying its distinct elements can be challenging. The following five major categories are emerging as primary elements of e-commerce:

1. The Internet and mobile devices;
2. Multichannel and omnichannel retailing;
3. Changing supply chains;
4. Distribution and fulfillment centers; and
5. Robotics and inventory systems.

This publication identifies and describes the foundational elements of this new way of shopping and shipping, and poses key questions for commercial real estate (CRE) professionals working in this realm. For a list of resources on these evolving elements of e-commerce, including reports, articles and white papers, go to **www.naiop.org/ecommerceinfo**. Visit the site frequently, as new material will be added regularly.

Editorial content prepared by NAIOP Vice President for Knowledge & Research Margarita Foster, NAIOP Managing Editor Julie D. Stern and Gregory McNamee, Sonora Wordworks, Tucson, Ariz.

Element 1: The Internet and Mobile Devices

The retail conversation has moved beyond brick-and-mortar versus online sales. No matter where they make a purchase, many people now get their first impression of a retailer from its Internet presence. According to Google, "the new store window is digital," meaning that a retailer's online presence is becoming increasingly vital to its success.

As online sales continue to grow, the platform on which those sales take place is slowly migrating from desktop and laptop computers ("traditional" e-commerce) to mobile devices such as tablets and smartphones (sometimes referred to as m-commerce). Those mobile devices are contributing to overall retail sales growth in two ways: first as sales vehicles, enabling consumers to make purchases on their smartphones and tablets; and second, as shopping research tools. The situation is further complicated by the fact that many e-commerce shoppers are now "crossing devices," beginning their research on one device but completing it on a different one (and, possibly, making a purchase on yet another).

One-quarter of all e-commerce dollars spent on Thanksgiving and Black Friday 2013 were on purchases made through mobile devices. On Cyber Monday, 1.9 million separate e-commerce transactions were completed on tablets alone, contributing to a total of $237 million in mobile sales and $2 billion in total e-commerce spending that day. Sales of products and services in the U.S. via mobile devices were expected to reach $41 billion in 2013 (16 percent of total e-commerce sales), up a dramatic 68 percent over 2012, and eMarketer estimates that they will reach more than $113 billion by 2017 — when the vast majority of digital buyers will be doing at least some of their purchasing via mobile devices.

More than nine out of 10 American adults now own a mobile device. Mobile usage varies by age, with more millennials (young adults aged 18 to 34) using their smartphones to research and purchase (30 percent, versus 20 percent of adults over age 35).

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The adoption of smartphones and tablets thus appears to have accelerated the pace of online sales and has resulted in a significant societal shift in when, where and how people shop. Retailers are scrambling to respond to the challenges posed by these changes, to understand how consumers use their tablets and smartphones to research products and services as well as to make purchases. Many expect to make mobile execution one of their top priorities in 2014, in part by investing in mobile-optimized websites, mobile apps, and/or responsive design, which makes a website display correctly no matter whether it is viewed on a desktop, phone or tablet.

While retailers currently are focused on adapting to handheld devices, no doubt some new software or technology will appear in the very near future that will disrupt the e-commerce configuration yet again. Retailers and CRE professionals alike will need to keep up to date on these evolving technologies as consumers adopt them, since they ultimately will drive where and how products are purchased, stored, transported, and even manufactured.

Element 2: Multichannel and Omnichannel Retailing

The retail industry is continuously integrating its physical and online presences to keep up with technology and consumer shopping preferences, as today's physical and digital storefronts are stretched across a variety of locations and devices. At the heart of this transition are multichannel and omnichannel retailing, terms that many use interchangeably. Emerging definitions refer to multichannel retailing as the sale of goods through at least two distinct channels — such as brick and mortar, television, catalog, social media, e-commerce and m-commerce — while the broader category of omnichannel retailing integrates many or all of these channels, both for purchases and for returns.

Cross-channel activity is becoming the norm for today's shoppers: a woman shopping for a new watch, for example, may begin by leafing through a catalog, then research different brands and models on her desktop computer, check retailers' prices and availability on her tablet or smartphone, and eventually make an in-store or online purchase. If she later decides to return the watch, she may begin that process online, by visiting the store's website to arrange to return the watch by mail or a package delivery service — or she may return an item bought online to a store.

Omnichannel strategies already are impacting retailers' bottom lines. Forty-one percent of the retailers surveyed by Forrester in 2013 reported that their buy-online, pick-up-in-store program had delivered significant positive improvements to their customer loyalty metrics, while 47 percent reported that their ship-from-store program had resulted in higher online revenue.

Savvy retailers are doing their best to optimize shoppers' experiences via multiple channels, not just one or two. They are modifying store sizes and layouts, installing tablets that shoppers can use to order online while in a store, adding larger touchscreens that display additional inventory and creating both larger stores that offer shoppers new experiences (cooking demonstrations, rock climbing, wine tastings, art classes and so forth) and smaller stores that make the shopping experience more intimate.

The "buy it anywhere (and, increasingly, anytime), get it anywhere (and as quickly as possible), return it anywhere" concept clearly has enormous implications for commercial real estate. Retailers — and those who develop, own, operate and invest in retail and industrial real estate — need to understand changing patterns of consumer demand and respond by adapting their business models and practices. Consumers now expect retailers to provide a personalized and seamless omnichannel experience, and those who are figuring out how to do this — for example, by synchronizing technologies, services and processes in ways that enable consumers to shop, purchase, and return goods via multiple channels — will be the winners, while those who are unable to do so will lose out.

How can a retailer strike the right balance between online and in-store purchases, returns, inventory management and physical locations — including both stores and fulfillment centers? As this integration unfolds, the CRE industry will need to provide not just new products, such as hybrid retail/distribution centers and fulfillment centers, but also new services. Successful business platforms will become integrated in ways that take into consideration not just a retailer's showcasing needs but also its inventory management and fulfillment practices. This deeper understanding of the retail industry will enable CRE professionals to offer comprehensive retail and industrial solutions as the retail industry explores ways to find balance in this new paradigm.

Element 3: Changing Supply Chains

E-commerce is forcing both retailers and transportation/logistics companies to make significant changes to their respective supply chains — the way goods are moved from manufacturers to retailers and consumers. According to Retail Systems Research (RSR), a retailer seeking to increase its e-commerce presence faces three key challenges:

1) The existing supply chain is not structured to accommodate high volumes of direct-to-consumer shipments;
2) Existing warehouses cannot accommodate high volumes of direct-to-consumer shipments; and
3) New processes are needed to help retailers accurately and efficiently account for online purchases returned to stores.

At the core of these issues is inventory management. Retailers that can figure out how to make their inventory chains transparent will be able to create efficiencies in these new supply chains, which increasingly are being dominated by direct-to-consumer shipments. A survey conducted by RSR reports that retailers say the only place they have relative confidence in their inventory levels is in their distribution centers (DCs). Understanding enterprise-wide inventory levels is much more challenging, as is identifying which and how many goods are located in individual stores, on store shelves, available online or through direct channels, en route to or from stores, or en route to or from DCs. As omnichannel retailing becomes the new norm, connecting the inventory dots among all of the various channels will be critical to a retailer's success.

If consumers, retailers and manufacturers are the actors and retail goods are the props in this play, then transportation and logistics firms — which drive to, dock at, load and unload goods at ports, industrial sites, retail facilities and now homes and offices — are the stage crew, the invisible hands that move items behind the scenes. Surprisingly enough, this silent partner is the second-largest employment sector in the U.S., employing more than 6 million people and expected to add 270,000 jobs annually through 2018. Finding enough interested and qualified workers is therefore a significant issue facing this sector in the future.

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For close to a century, the smallest piece moved by a logistics company was a pallet or a large box, which generally was delivered to a warehouse or distribution center located close to an interstate highway. Today, many of these companies — and the third-party delivery services they hire — are expected to be able to deliver a single item to a residential address, often in a suburban or urban setting that is less than inviting to even the nimblest of delivery trucks. This new delivery model poses both cost and environmental challenges for the industry. Experts suggest that these challenges can be overcome by focusing on collaboration among competitors, so vehicles and containers are at least partially full on return trips; increased cross docking and dynamic vehicle routing in urban areas; and use of robotics, automation and sensors to move goods and track inventory.

Element 4: Distribution and Fulfillment Centers

Distribution centers (DCs) typically serve customers who order in quantity or single vendors who warehouse durable goods such as refrigerators and HVAC units for stores downstream. Of late, these DCs are being supplemented and sometimes supplanted by e-commerce fulfillment centers, whose model is well expressed by the phrase "endless aisle."

Customers increasingly expect not just endless choice, but also instant gratification. It is not enough to carry an item; a vendor has to be able to deliver it quickly, too. E-commerce fulfillment centers will play a key role in meeting this demand. They are geared not to replenishing brick-and-mortar stores but instead to satisfying online orders, often for a single item, which typically are smaller than those for traditional distribution centers. In this work, speed is of the utmost importance. The current wisdom is that anyone wishing to do retail business online must be capable of same-day order fulfillment, which means that multiple sort points have to be built into facility design.

With the growth of e-commerce comes increased demand for large contiguous blocks of industrial space. Currently, there is a pronounced shortage of large blocks of Class A space. Major retailers who operate fulfillment centers requiring more than 500,000 square feet face difficulty in finding existing spaces to meet their needs, requiring new construction of structures that, in addition to being large, have extensive truck and trailer parking and dock facilities, high roofs (allowing for multiple mezzanines), large employee parking lots and expanded facility power systems with backup generators to allow optimum performance at peak times. Most retailers prefer facilities located close to population centers, which provide easy access to both labor force and consumers. But finding sites large enough to accommodate these types of facilities, circulation patterns, employee parking, highway access and proximity to populations can result in higher land costs.

At the same time, demand for medium-sized fulfillment facilities also is expected to increase, as third-party logistics (3PL) providers enable retailers to grow their e-commerce businesses by operating single- and multitenant fulfillment centers throughout the nation. Whether large, medium or small in size, those centers need to be served by top-quality road and railroad networks. Smaller ones can be located in appropriately smaller regional hubs: in Spokane, for example, to serve eastern Washington and northern Idaho, or in Rochester to serve central New York.

Both new construction and retrofitting of existing structures will be needed to accommodate demand. According to Cushman & Wakefield, cutting-edge fulfillment centers — with their higher ceilings, greater building depth, wider column spacing, energy-efficient systems and sustainable materials — can cost three times as much to build as traditional warehouses. With such significant investment at stake, planning for fulfillment centers requires developers and retailers to look even more closely at all matters of location, logistics and zoning codes. Vendors also will consider local and state taxes and the possibility of incentives that can be secured from local and state governments. Larger vendors are in a particularly good position to bargain, since they will be bringing needed jobs to communities in quantity. Home Depot's e-commerce warehouses are expected to employ about 300 workers apiece, for example, while a recently established Macy's distribution center in Martinsburg, W. Va., received $17.3 million in tax and other incentives.

Element 5: Robotics and Inventory Systems

When Amazon.com founder and CEO Jeff Bezos announced that the company was eyeing the possibility of delivering packages from warehouse to door by means of miniature drones, he wasn't confusing aircraft for pie in the sky. While such machines are some years away from being a practical reality, the very idea of them speaks to revolutions in both the supply and fulfillment chains and in everyday robotics, with automated systems expected to become ever more prevalent in doing fulfillment work once done by humans.

Planning for the anticipated growth in e-commerce requires vendors in turn to plan for design and implementation of robotic systems in their fulfillment and inventory chains. One simple application is the use of robots to automate forklift operations, with guided vehicles that can be programmed to move and deliver pallets and carts. On a smaller scale, Kiva robots, which cost about $25,000 each and are manufactured by a company acquired by Amazon in 2012, travel around warehouses bringing smaller storage units to human workers for picking and packing.

With robotic systems come substantial savings in the cost of fulfillment. For one thing, they will significantly reduce the number of human workers who are needed on the job, although human workers will always be required — not just to operate and maintain robotic systems, but also to augment them by, say, picking and packing single-item orders that a human can fulfill more efficiently than a machine can. Jones Lang LaSalle observes, for example, that while Amazon's 1 million-square-foot facility in Chattanooga, Tenn., is fully "robotized," it still employs more than 2,000 people. New Amazon plants coming online around the country feature a similar mix of human and robotic workers.

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Robotic systems are expensive, even more so if they sit idle during non-peak periods, which means that those systems must be designed with an eye to how they are deployed during periods of both high and low consumer demand. A business strategy that keeps orders coming in at every hour of every day is an obvious solution, but until that ideal is met, midsize companies may be slower than larger ones to automate fully. Meanwhile, planners are challenged with creating inventory management systems that can scale easily to handle peak periods. Such systems — which make use of technology such as RFID (radio frequency identification) tagging, mobile barcode scanners, browser-based inventory software and the like — are particularly useful to companies in fields such as fashion that experience marked seasonal ebbs and flows and that need to be especially attentive to just-in-time, demand-driven stock replenishment.

Software and technology spending is now the largest cost category in supply chain investments. Because of the costs associated with planning for and purchasing robotic and other types of automated systems and their inefficiency during times of low demand, it seems reasonable to assume that these systems will not be overtaking the fulfillment process completely — at least not in the near term. No one system can be applied to all products: Food vendors will need different types of apparatus from those used by fashion retailers. Existing systems also are not perfectly scalable, meaning they cannot be easily duplicated for small, medium and large applications. The implication for real estate developers is that cutting-edge fulfillment centers must be tailored to their users, and that build-to-suit development will likely continue to be the preferred route taken by retailers and third-party logistics providers alike.

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