Transformation in the retail, logistics and transportation industries

How industry leaders are responding

to the Amazon effect

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In this report

- The 'Amazon Effect': How Amazon's influence is causing the merging and transformation of the retail, technology, transportation and logistics industries

- Details on the new competitive threats incumbents in these industries are facing

- Insight into the partnerships industry players are forming to compete with digital age disruptors

- Industry- and category-specific predictions for how companies will remain competitive

- Analysis of how retailers are adopting IoT connectivity in their omnichannel strategies and the role of IoT in logistics

- How retailers are adopting AI and machine learning to optimize inventory planning and merchandizing

A digital transformation rooted in the Internet and led by a handful of companies is disrupting nearly every industry.

Leading the way is Amazon.

$1 Trillion
Market capitalization

By exploiting an array of digital technologies and offering free shipping, Amazon has succeeded in providing consumers an almost unlimited choice of products, aggressive discounts, and near instant delivery. This model has quickly catapulted Amazon to a $1 trillion market capitalization, making it only the second company in U.S. history to be so highly valued.

For companies not born in the Internet age, but which find themselves suddenly competing with Amazon, emulating the company's data-driven strategy and ruthless efficiency is a 'success or failure' proposition.

This report examines three industries experiencing profound changes because of Amazon's rise: retail, transportation, and logistics. To remain competitive, players in these industries are investing heavily in technology to streamline their operations. They're deploying digital capabilities throughout the enterprise to capture more data and make better decisions.

They're forming novel strategic partnerships to grow and maintain market share. Recognizing that physical stores can be an asset, forward-thinking retailers are optimizing the customer experience through an omnichannel, data-driven approach to marketing.

This report is based on interviews with business and technology executives at many of the world's leading retail, transportation and logistics companies, including FedEx, JD.com, CVS and DHL. While the report focuses mostly on North America, its findings are relevant to global markets and trends.

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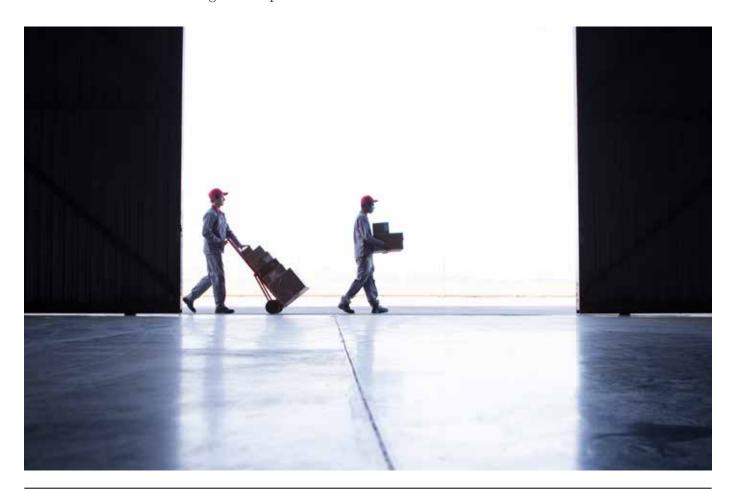
Methodology

$500 billion

in annual revenues generated
by companies surveyed

SJC was commissioned by
Arm, one of the world's leading
technology and design services
companies, to research the
challenges and opportunities
facing leaders in the transportation,
logistics and retail industries.

This report explores and examines the challenges these
companies face, and offers guidance on how they can
improve their efficiency and profitability, and transform
into more consumer-focused digital enterprises.

SJC drew on its many years of experience working with
global, national and regional transportation, retail and
logistics companies. SJC Founder and CEO, Satish
Jindel, interviewed senior executives at industry-leading
companies including FedEx, JD.com, CVS and DHL.

Together these companies account for global annual
revenues of $500 billion and all have a large presence
in the United States.

The industry response to the 'Amazon Effect'

$15 billion
Alibaba investment in Cainiao

$500 million
Google investing in JD.com

30%
Ownership in Best Inc.

When Amazon first started selling books online, it was viewed as a direct competitor to bookstores.

Over the years it has expanded its reach, disrupting department stores, big box stores, and speciality stores. And with its acquisition last year of Whole Foods, Amazon accelerated its evolution — and the transformation of every industry it touches.

At its core, Amazon is a hybrid company composed of technology, retail transportation and logistics services. It is highly disruptive and is forcing changes in each of these industries at a breakneck pace. It is not only Amazon, however, that has leveraged technology to cause disruption. In China, e-retailer JD.com has transformed shopping by using IoT scolutions and other digital technologies to serve customers better. In response, companies in these disrupted industries are creating a complex web of partnerships and alliances in order to compete with both Amazon and JD.com.

In the retail sector, companies like Walmart and Macy's have reduced their retail square footage in order to reduce costs and improve efficiency. Other retailers including JCPenney, PacSun, Toys "R" Us, Sports Authority, Payless Shoe Source and The Limited have either announced plans to file for bankruptcy or have gone out of business

As Amazon has grown and diversified its business, its disruptive effect has spread, impacting an array of companies and industries, including:

• Search engines—Google with its own search technology

• Technology providers such as Microsoft and IBM Third-party fulfillment houses—Radial and FedEx Supply Chain with its Fulfillment By Amazon (FBA)

• Freight forwarders by obtaining a Non-Vessel Operating Common Carrier (NVOCC) license

• National parcel carriers (FedEx, UPS) and regional carriers by building over 39 sort facilities and deploying Delivery Service Partners (DSP) to provide last mile delivery to its millions of consumers

Amazon's purchase of Whole Foods instantly gave it retail stores all over the country. To compete, partnerships have formed at a rapid pace and include:

• Walmart taking a 10 percent ownership in JD.com

• Google investing $500 million in JD.com for one percent of the company

• Microsoft partnering with Walmart to compete against Amazon technology and cloud computing,

• Alibaba, the largest platform in the world, investing $15 billion in Cainiao for fulfillment services taking a near one-third share in Best, Inc. for last mile parcel and freight delivery services, and UPS, establishing a partnership with SF Express in China.

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Transportation

6.1 million
Amazon parcels shipped per day in the U.S.

28%
of Amazon parcels shipped by UPS and FedEx

1.9 billion
Annual parcel volume

With a diverse portfolio of capabilities, speed and a relentless obsession with customer experience, Amazon has the scale to justify its own transportation service, putting competitive pressure on retailers that use trucking companies and parcel carriers to deliver products.

These developments are triggering changes in the transportation and logistics industries, which are affecting every type of carrier.

To illustrate its scope: Amazon has contracted with two airfreight carriers, Air Transport Services Group, Inc. and Atlas Air Worldwide, for dedicated airlift, and it has invested in both publicly-traded companies. And, within a relatively short period, Amazon has become the largest shipper of heavy shipments and the largest shipper of large, bulky products that require two-person teams for delivery and installation at consumers' residences.

SJC estimates that in 2017, Amazon shipped about 6.1 million parcels per day to customers in the U.S., reaching a total of approximately 1.9 billion for the year.

SJC estimates that:

- *62 percent was delivered by the U.S. Postal Service*
- *21 percent by UPS*
- *7 percent by FedEx*
- *9 percent by all other last mile delivery companies*

In comparison, FedEx Ground delivered 6.6 million parcels per day for a total of 2.1 billion in 2017 for its more than 1 million shipping customers, which generated over $17 billion in annual revenue for the company.

With projected 2018 parcel volume of over 2 billion — growing at a high double digit rate — Amazon is the largest customer for USPS, UPS and FedEx, and for many regional and last mile delivery companies. And while Amazon continues to use third-party shipping companies, it is also developing its own transportation service.

Prescription drugs

The success of Amazon in every area it has chosen to focus its efforts on is again being underlined by U.S. drug store chains now exploring new survival and growth strategies in the expectation that Amazon is about to enter the prescription drug business.

For example, the market views CVS' acquisition of Aetna's health insurance business for $69 billion as a response to this future competitive threat. Since the CVS/Aetna deal was announced, Amazon has confirmed its interest in delivering prescription drugs to consumers, evidenced by its acquisition of online pharmacy PillPack for an estimated $1 billion.

Drug stores will likely face higher delivery costs if they try to compete with Amazon by shipping from thousands of retail stores. However, this would allow for faster delivery compared to shipping from a fulfillment center.

The retail prescription drug industry is hoping for a cost-effective last mile service from stores. CVS is testing last mile delivery to consumers' homes for next day delivery via a partnership with the USPS. And it is experimenting with same day delivery by using same day courier companies. However, both services have a delivery service fee, which will likely deter consumer adoption, given Amazon's likelihood of providing such deliveries for free or at a steep discount.

Technology

Because many of the challenges in the transportation, logistics and retail industries are now driven by technology innovations at Amazon, many companies in these industries are partnering with tier-one technology providers in order to provide Amazon-like services.

These companies recognize the need to invest in technology for productivity and efficiency gains to meet the needs of their customers in the fast-changing supply chain. This has led to several developments:

• FedEx and UPS each spend over $1.5 billion per year on technology, while smaller transportation companies are investing hundreds of millions collectively to prepare for the future.

• Venture capital is funding startup companies in hopes of finding the next Uber for the freight industry.

• The new world of autonomous vehicles is forcing technology providers into the industry, which have been investing in electronic log devices (ELD) and other technology, to rethink the future of their devices.

Challenges and forecasts

SJC's research shows companies using technology to adapt to new competitive pressures and changing consumer demands, such as:

- The omnichannel customer journey: Customers are finding new ways to buy online and in person.

- Supply chain visibility: Better supply chain management requires more accurate, less labor-intensive ways to predict what customers want and location data of their products.

- Last mile fulfillment: Finding efficiencies while delivering ever faster and more personalized service to each customer.

Omnichannel customer journey

The shift to omnichannel marketing, merchandising and fulfillment – mixing shopping in stores with shopping online – presents numerous challenges to retailers and the companies they enlist to deliver products. Advances in technology may help alleviate these challenges, but they are forcing industry players to adapt quickly.

Better omnichannel data connectivity for improved merchandizing for personalized merchandizing and targeted marketing

While retail marketing teams need to plan and execute omnichannel campaigns, the merchandizing teams need the right product in the right location whenever a customer decides to buy – whether it is a planned purchase or a spur-of-the-moment decision. However, they must also order apparel, for example, months in advance. If they don't get the order quantities correct, it results in unsold inventory and missed sales

opportunities. And this merchandizing is hyper-local, specific to each store based on demographics such as whether its shoppers are tourists or locals, for example, and how much disposable income they have.

For apparel and accessories retailers, bad merchandizing decisions can lead to unsold inventory worth up to 20 to 30 percent of revenue.

> **SJC Forecast:** *Retailers will increasingly equip stores with sensor-based IoT devices, including beacons and cameras, to capture information about how shoppers engage with store items and brands. This in-store data can be combined and managed with data collected from digital channels, allowing retailers to better align their online and offline promotions and merchandizing strategy. When retailers scale this omnichannel data visibility framework across hundreds of digital channels and IoT device enabled stores, the value of the data will increase by many magnitudes, helping to improve marketing, merchandizing and fulfillment performance, as well as customer service's ability to help customers.*

This is an area where the industry is looking for help from technology companies, especially regarding machine learning and artificial intelligence. Advances in this area could help the apparel industry to use societal trends to predict the styles and designs that will appeal to different segments of consumers months in advance.

New developments in data management could also help apparel retailers, for whom 30 percent of Stock Keeping Units (SKUs) in the store deliver only 1 percent of gross margin. These retailers have long depended on rules-based forecasts (a person who buys diapers is likely to also buy beer, for example). But these forecasts are not as sophisticated as those that can be achieved through artificial intelligence and predictive analytics.

There is already movement in this direction: Walmart and Microsoft have announced a five-year deal to leverage Microsoft's expertise in machine learning and artificial intelligence to help Walmart employees stock the right products in the right stores and on the right shelves, and to optimize the performance of freezers and other equipment that are expensive to operate. A similar partnership between Pointy and Google is focused on helping brick-and-mortar retailers optimize their product stocking by giving online shoppers visibility on in-store inventory for immediate purchase.

Making the best use of storefronts

No longer do customers who want to snack on chips and salsa while watching a baseball game automatically head to the grocery store. Some do, but others may shop online instead. A store that once knew it would sell a lot of chips on game days now struggles to determine exactly how many bags of chips to stock in its brick-and-mortar store versus at the warehouse that supplies online shoppers.

Competitive pressures are forcing some retailers to reduce the square footage of their stores, which means they have fewer items in stock – thus reducing the incentive for customers to stop by.

This causes a particular problem for drugstores, which have relatively low profit margins on the pharmaceuticals they sell but depend on the foot traffic pharmaceuticals generate to sell other higher-margin items. While the front of the store carries high-margin business, that volume is declining with the growth of online orders. The pharmacy in the back of the store is a low margin business.

The pressure to stock many items in a smaller space, using data to determine what is likely to sell, also creates challenges for the local store staff, which lacks information on what products are in stock, where the hundreds of products are located in the store, the age of the products and their expiration dates. Better tracking systems with analytics could help with both challenges.

Analytics software will help staff know what product to stock and when, while tracking technology will make it easier to locate items.

> *SJC Forecast:* *The future of big box retailers is in doubt. Brick-and-mortar stores will need to reduce their inventory of slow-moving products. Even for fast-moving products, the stores will have to carry smaller inventory on the shelves, frequently replenishing them to avoid stocking the wrong products in the wrong locations. The omnichannel model will likely help stores anticipate demand and track why consumers visit particular stores.*

In addition, shopping mall developers will need to change the layout and mix of stores to enable the omnichannel retail experience. Instead of taking destination trips to anchor retail stores, families may go to an entertainment facility first, then stop by a retail showroom to browse products that they then order online for home delivery.

Dealing with seasonal sales spikes

The retail industry has long dealt with seasonal spikes in purchasing, as consumers spend much of their money during the holiday season. However, whereas customers used to go to stores to do their shopping, they now expect to have their purchases delivered to their door. This has put tremendous pressure on the logistics sector. Retailers still add temporary workers in November and December, and now, in warehouses and the last mile delivery network, the need for extra workers has become even more expensive and challenging to manage.

These pressures are leading companies to hire under-qualified and inadequately trained temporary workers, which contributes to higher labor costs and a negative customer experience. Retailers and delivery companies face tough decisions about balancing these expenses against the high capital cost of automation equipment.

SJC Forecast: SJC believes logistics companies will increasingly deploy surge/peak pricing similar to the approach currently used by airlines and hotels. At least one large transportation and logistics company has embraced this idea and is planning to deploy it. Retailers will have to pay a higher price during certain periods, which will lead them to help consumers change their behavior to either avoid creating these spikes in volume or pay a premium for delivery at those times. This has already started happening in the parcel delivery industry, with UPS implementing premium pricing near Christmas.

Increasing numbers of returns

Consumers who buy products online have often never seen, tried on or felt the product before buying, making returns more likely. Online shoppers also expect the option to return products with no charge. This is resulting in an exponential increase in returns. Handling all these returns – receiving the returned merchandise, issuing credits, and getting the merchandise into the right channels for resale – is costly and labor-intensive.

SJC Forecast: Artificial intelligence and data analytics will be used more extensively to track purchases by consumers, with two goals: first, to help avoid consumers buying items that are the wrong size or color; and second, to identify those who are abusing the free return service.

Supply chain visibility

99.7%
Order fulfillment accuracy

The path products take from the warehouse to the customer – sometimes with a stop at a retail outlet – poses a number of challenges for the companies selling and transporting the products. Here, too, technology may play a role in overcoming the challenges.

Fulfillment errors

As brick-and-mortar stores use omnichannel strategies to compete with Amazon and other online retailers, they depend on fulfillment houses to send the right products to the right customers. 99.7 percent order fulfillment accuracy may sound good, but a huge volume of orders means that even a 0.3 percent picking rate error leads to over 14 million errors per year.

Complicating the issue is low unemployment, which makes it difficult to find skilled workers for this type of work, and employee turnover is high.

SJC Forecast: Fulfillment houses need to make their operations simple and efficient, automating where possible and creating jobs where little to no training is required. They will invest in location and navigation technology to help seasonal workers learn quickly, and to optimize their picking efficiency and accuracy. Advances in asset tracking solutions will play an important role in helping fulfillment houses increase their accuracy rates

Tracking pallets, packages and items during transit

The way shipping and logistics companies track the goods they deliver is due for an update.

The transportation industry is still using barcode systems to track parcels and shipments. The barcodes themselves are inexpensive, but they require a lot of labor and technology to scan. In addition, barcode technology, which dates to the 1980s, is limited in how much data it can store.

Another example of outdated logistics tracking technology is the paper manifests still used by heavy freight (also called less-than-truckload, or LTL) shippers for over 70 percent of shipments. Heavy freight carriers, which typically transport shipments weighing from 100 pounds to 10,000 pounds, have long wanted to move the manifests to electronic format. Heavy freight shippers are already using electronic manifests for the shipments they send via parcel carriers.

However, there have been numerous barriers to the adoption of electronic manifests. The shippers are often midsize companies that ship goods with dozens of different transportation companies, and they would need to invest in technology and employee training that would work for all their carriers. Technology, especially mobile device connectivity, has not been as reliable as paper – for example, a mobile device's battery could go dead while an employee is in the field.

Technology could help solve a related problem for the heavy freight industry as well: the need to capture the dimensions and other characteristics of their very diverse shipments. Because these shipments require forklifts to move, it is critical to have as much information as possible about them in advance.

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The system currently used for this is both time and labor intensive. The industry would like to standardize on a handheld or mounted device that can capture the dimensions of shipments as they are picked up.

SJC Forecast: Several factors are coming together to push shippers and carriers toward updating their technology. A shortage of workers is adding to the competitive pressure to digitize. At the same time, technology is becoming more reliable and easier to use.

For example, using IoT applications such as sensors instead of barcodes would reduce the labor costs associated with smart logistic tracking. Industry players are already investing millions of dollars to replace barcodes with IoT sensors, including smart chips generated by 3D printers. With over 40 million parcels and shipments moving every day globally, the potential volume for IoT-based replacement is over 14 billion per year. SJC expects this replacement to be well underway by 2021. In addition, technology such as Bluetooth beacons may reduce the number of manual scans each package has to go through. When shipped, the typical package is scanned 25 times, costing the carrier $0.25-0.50 per package. By reducing the number of times a package is scanned, carriers can lower their shipping costs and expedite shipments, while at the same time providing real-time visibility into the shipment for the shipper and customer.

However, managing data generated by scanless shipments will be important. FedEx estimates that going scanless will increase the amount of data generated per package journey from 25 scans to two million datapoints per minute.

Shipment security

The security of high-value shipments and controlled substance products in transit is an ongoing concern, especially for the pharmaceutical industry, where truckload shipments can be worth several million dollars. In the past, sellers have been able to absorb some loss of product, either at the retail level or during transportation, because they benefitted from relatively high profit margins. Now, pressure from the digital age disruptors and other online retailers is forcing sellers to accept lower margins.

SJC Forecast: Security, especially data security and device security, will take on greater importance with the development of autonomous vehicles for shipping. With no drivers in the cabs, the trucks will need IoT security technology that can monitor and report on any breach. In the future, visibility into a truck's location data and the condition of its products at the pallet, package and item level will be critical.

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Last mile fulfillment

15%

Cut on the value of the products sold via Amazon marketplace

How do products get to consumers' homes? In the past, consumers would go to a store, buy products, and bring them home themselves.

Although that still happens, increasingly consumers are ordering online for home delivery. They expect delivery to be fast and free, but that last mile to the customer is expensive and challenging for the transportation and logistics industry.

Customer demand for fast and free shipping

Retailers and delivery companies worldwide are struggling to meet customers' expectations for fast, free shipping, which increases fulfillment and transportation costs. Retailers are putting pressure on fulfillment companies, global delivery companies, regional carriers and last mile courier companies to lower their charges while improving their asset-tracking and fleet management capabilities.

The current fulfillment time for expedited service is one hour, which means each order has to be picked and sent out individually. An hour is not enough time to accumulate enough requests to put together a batch order.

Adding to the pressure, Amazon has started a Delivery Service Partners program similar to FedEx Ground's Independent Service Provider program. Its package delivery program leverages new technology developed for ride-hailing services. This technology allows Amazon to maintain its most profitable routes, and leave less efficient routes for the transportation companies.

These financial pressures make it difficult for delivery companies to offer value-added services and provide a high level of customer experience.

Innovations in technology may ultimately help the industry meet customers' expectations. For example, warehouse execution software may help fulfillment houses meet the one-hour demand for shipping. Machine learning can help make sure the right products are in the right markets or warehouses at the right time. And handheld or wearable technology may help workers at fulfillment companies use technology to find products faster and more efficiently.

Machine learning and artificial intelligence coupled with data analytics may be able to help retailers influence customer behavior. For example, by encouraging customers who make profitable purchasing decisions and discouraging others.

SJC also predicts that large online retailers will test and implement more innovative ways to lower the cost of deliveries. These could include locating facilities closer to the consumers, smarter fleet management and using technology such as drones and autonomous vehicles.

Finally, retailers may look to consumers to recover the cost of these increasingly fast deliveries. For example, retailers may offer higher-priced memberships, like Amazon Prime. Other approaches could include embedding the cost of delivery in the cost of goods sold or running ads on the products' packaging.

Last mile delivery costs

Companies are facing pressure to reduce transportation costs at a time when the cost of transporting goods is rising. Some sectors, like healthcare, have been able to absorb rising transportation costs, but now face a new emphasis on cost control.

Dynamics in the trucking industry are also contributing to higher transportation costs. Trucking companies are having trouble meeting demand for their services. Higher economic growth and the growth of online shopping have increased demand. Simultaneously, there has been a reduction in drivers because fewer younger people are entering the profession, while hours per driver are going down due to federal regulations.

The concentration of online shopping among a very few large vendors (among them Amazon, Walmart and Alibaba) is cause for concern among parcel and last mile delivery carriers. These large online retailers offer their marketplaces to smaller retailers who want to reach millions of prospective buyers – and the smaller companies then sign up with the larger ones for their logistics needs.

For example, third-party retailers make up about 60 percent of total retail sales for Amazon (or $68 billion in 2017) and are more profitable for Amazon because it takes a 15 percent cut on the value of the products sold via its marketplace, but doesn't have to actually stock the products. This approach gives Amazon the ability to aggregate the volumes of thousands of smaller online retailers and convert that volume into a huge leverage when negotiating for a lower shipping charge from parcel and last mile delivery carriers.

Walmart is experimenting with two new approaches to last mile delivery. The company is using its own store employees to deliver online orders on their commute home from work, and it launched a program called Spark Delivery, crowd-sourced delivery service that works similarly to ride hailing services. These types of innovations have the potential to influence every same day courier/delivery company and parcel carrier.

Lack of visibility into last mile delivery

The last mile before delivery is the place where visibility is most critical, yet communication often breaks down.

In healthcare, for example, deliveries to hospitals and nursing homes are fraught with multiple requests for data on the same delivery. Nursing stations on different floors within the same hospital will ask for information on the same medication and medical supplies.

The cause? A lack of connectivity within hospitals and a lack of connectivity management between the different capabilities (cameras, GPS and scanning) of the drivers' connected device (ie. cell phones or tablets). To make sure they have proof of delivery and the hospital has the data it needs, a delivery company may end up providing the same data to 35 different people at one hospital, for example, on different floors and units.

SJC Forecast: Better connectivity across devices used by hospital staff could alleviate many of these problems. SJC expects the use of real time devices by hospital personnel to expand and that their connectivity with suppliers' mobile devices will improve. This will mean that hospital personnel (nurses, technicians, procurement staff on different floors and different wings of the building) will have real-time visibility of the location of their order.

Trucking inefficiencies

The trucking industry could be more efficient if the data gathered by trucks were connected and analyzed. For example, regulations require telematics devices in the cabs of heavy-duty trucks to monitor driving hours and break hours. This data, when matched with other data points, could help reduce costs and improve efficiency in the trucking industry, while still absorbing the increase in rates due to the tight labor market.

In addition, today's trucks have cabs with multiple devices that connect to the Internet. Yet they are not connected to each other. If they were connected in a single pane of glass via device management platforms, they could be managed better such that the driver could focus on driving more safely.

Likewise, when trucks get stopped at transfer points or ports – or even in traffic jams on highways – it increases the cost of transportation. When the delays are caused by poor practices by the shippers, the more efficient shippers get penalized.

SJC Forecast: The shortage in drivers and warehouse workers will continue to be a challenge in the logistics industry. Yet SJC believes the solution won't be more drivers or warehouse workers but technology. Safe, autonomous vehicles will likely help on some routes. Technology may also help increase driver productivity through predictive analytics and by leveraging the data from telematics devices that federal law requires.

India and China:
The key to success

The challenges facing retailers and logistics companies do not stop at the U.S. border. They are global, with different players dominating different continents and countries.

In some markets there are clear winners; in other markets the winners aren't yet established. As a result, the race for global dominance continues.

Amazon is the leading e-commerce company in Europe and the U.S., while JD.com and Alibaba are the biggest e-commerce players in China. And their success in China means JD.com and Alibaba now have the scale and sophistication to compete in the U.S., and they've begun making inroads.

India represents a very big and strategically important market. And while no single winner has emerged, Walmart is making inroads.

Given the relative global marketshare of Amazon, JD.com, Alibaba and Walmart, SJC believes that whichever company captures the most market share in India will be the global e-commerce leader.

Speed of delivery critical

The Chinese market offers an example of how to meet customers' expectations for fast, free delivery. JD.com has over 110,000 drivers who make multiple deliveries daily–delivering products to consumers before noon, during the afternoon and again in the late evening. This allows it to merge three products stocked at three different fulfillment centers into one delivery within 8 hours on the same day.

However, international markets still present challenges.

Cold chain

Both India and China lack automation in their cold chain – the delivery of products that need refrigeration.

In India, one company has developed a way to deliver milk, but it has not leveraged its core competency for other perishable items like produce. One reason: huge pushback from brokers involved in the supply chain. For example, in India there are three to five middlemen involved in the transfer of fruits and vegetables from "farm to fork" and they will resist any changes to the supply chain that threaten their jobs and income. Another issue is the expense of refrigerated units, which makes improved packaging of perishable products a more realistic solution.

In China, similarly, shipping perishables is expensive since it requires specialized fulfillment centers and special packaging, which increases the cost of delivery to customers accustomed to free shipping. Transporting produce from farms is also challenging because most farmers are located far from major cities, requiring that produce be transported by plane.

SJC Forecast: In China, online retailers may start investing in brick-and-mortar stores to help with cold chain issues, such as Amazon did with its 2017 acquisition of Whole Foods. There is also an opportunity for technology to help: As the cost of solar panels drops, electric refrigerated vehicles may be able to self generate the energy they need. Improvements in packaging may also help.

Small retailers

China and India both have extensive networks of "mom and pop" retail stores – small stores serving towns and villages that are difficult for e-commerce to reach.

In China, these small stores represent a major

challenge for online retailers such as Alibaba and JD.com in their efforts to penetrate the total retail sales market.

In India, small family-owned stores called kiranas control over 90 percent of the total retail sector. Online retailers would seem to have some advantages over the kirana stores: the average kirana store has 250 to 300 SKUs, where as an e-commerce fulfillment center has over 100,000, for example. And compared to online retailers, kiranas charge substantially higher prices for comparable goods. However, the Internet — and therefore e-commerce — does not reach hundreds of millions of consumers in villages and small towns.

SJC Forecast: The Indian market represents a prime opportunity for omnichannel marketing, with online retailers leveraging the kirana stores in every local community. E-commerce companies have efficient fulfillment centers and access to capital, but they lack an understanding of local markets and haven't earned the trust of local residents — something kiranas can provide. An omnichannel retail model can leverage the best of online retailers and kirana stores: both channels cooperating instead of competing, and creating value for consumers.

SJC's outlook for the retail sector in China is similar in many respects. In addition, Chinese e-commerce companies can expect to see growth opportunities abroad: to neighboring countries in Asia and the U.S.

Labor costs

Labor costs are a challenge everywhere, but India's situation is unique. The Indian government has increased the country's minimum wage and employers are seeking automation to offset the increased costs.

SJC Forecast: This could have an impact on a lot of unskilled labor. If the minimum wage increase means that the cost of loading a truck doubles or even triples, it may make sense to automate this function. This will result in the displacement of unskilled workers, which could create problems if they cannot be trained for other work.

Conclusion:

Any company wanting, or needing, to compete with an e-commerce giant such as Amazon will only succeed if it can use its data as a strategic asset to generate new insights and business value.

Amazon is the first data-driven company using a combination of a virtual storefront and marketplace, state-of-the art warehousing, and instant delivery to meet the needs of the 21st century consumer.

Its business model is adaptable to almost any industry, practically guaranteeing its continued growth and expansion.

The best course of action for any company facing competition from Amazon or another major e-commerce company such as JD.com is to manage its data as a strategic asset, focusing obsessively on customer needs and behavior and developing omnichannel marketing and merchandizing strategies that optimize supply chains through the use of data-driven insights.

This will require traditional companies in the retail, transportation and logistics industries to embrace an ecosystem-driven strategy and partner closely with technology companies that can help them compete in the digital economy.

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