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Transportation, The Last Mile and The Fleets of the Future

I. The Supply Chain, The Last Mile - A Discussion of Transportation Companies and Logistics company trends

What is the last mile? It is the last mile of delivery between the distribution center and the point at which the consumer will receive it. Be it a restaurant, a home, high rise or a retail store, there lies a complex and competitive space of entities trying to perfect the last mile as economically and efficiently as possible. This discussion will talk about the marching orders of manufacturers, logistic companies, carriers and shippers to provide a seamless customer experience – with a supportive infrastructure and technology – to literally and figuratively ***deliver***. This fast paced ecommerce-based fulfillment model, requires, among many other things, faster transit times and more drivers.

The trucking industry reached a 20-year peak for tonnage hauled in 2018. American Trucking Associations estimates the industry, which has 3½ million drivers, is short more than 50,000 drivers. Walmart reported that in 2019 it is raising salaries in its push to hire 900 more drivers. An offer of an average annual salary of $87,500 and 21 days of vacation in the first year, and benefits that include safety bonuses, predictable scheduling and a referral bonus, the offer provides an attractive package for drivers.

Companies continue to invest and compete for the best drivers as a shortage of truckers in the United States continues. In the latest hiring push, Walmart's driver wages will rise by $14 million from a combination of a per-mile increase, activity and drop-off pay.

II. Logistics Companies

Modern innovators in the logistics space focus resources not only toward finding a way to deliver goods at varying speeds through various modes of transport but, logistics companies have long been known to keep an eye toward improving efficiencies. Company resources are driven to the IT side of the house for investment in technology and automation to develop load matching, machine learning, network telematics, self-driving vehicles, augmented reality, artificial intelligence and even robotics.

DHL, the "World's Leading Logistics Company" has introduced the Parcelcopter in its delivery chain. Typically, that trip would take 30 minutes by car but it took the Parcelcopter only eight minutes. DHL has also proclaimed on its website "In 1969, the year Neil Armstrong was the first man to walk on the

moon, DHL began to revolutionize the world of logistics. Now, we are breaking new ground again: in cooperation with space technology company Astrobotics, we will make deliveries to the moon a reality".

Logistics companies continue to utilize AI, it will continue to accelerate the path towards a proactive and predictive automated future. However, AI it is not without its challenges and business, society, and government bodies will need to develop standards and regulations to ensure the continued progress of AI for the benefit of humanity.

Additionally, augmented reality will also impact the logistics field. A warehousing operation, for example, is largely a physical affair with workers depending on the pick-by-paper approach, even in developed countries. Training employees requires lengthy training. AR and computer vision may change that, through the pick-by-vision system that can revolutionize warehousing operations.

III. Expansion of the Carrier's Business

Innovation for the Transportation industry casts a wide net beyond hiring drivers and technology. Business and consumer demands require a modern approach on all fronts in the transportation industry. For example, to meet the demands of the increased tonnage, some carriers are advocating a configuration utilizing twin 33-foot trailers.

John Sommers II for TT

In an article from Transport Topics in March 2017, an analysis by traffic safety researcher Ronald Knipling concluded that a widespread adoption of twin 33-foot trailers would boost safety and efficiency for U.S. drivers, consumers and businesses, "Allowing widespread use of twin 33 trailers is commonsense policy," Knipling said in a March 13 statement. "Not only are they more stable at highway speeds, the efficiency gains mean we have fewer trucks on the road."

Opponents suggest that the 33-foot trailers may endanger motorist who are not familiar with longer trailers on the roadways. Knipling's study concluded that a shift to twin 33s would result in reduced exposure to risk, fewer annual truck accidents, improved fuel efficiency, lowered emissions and reduced traffic. The analysis, entitled "Twin 33 Foot Truck Trailers: Making U.S. Freight Transport Safer And More Efficient," was commissioned by Americans for Modern Transportation, a coalition of shippers and retailers led by UPS Inc., FedEx Corp. and Amazon.com supporting the nationwide access of twin 33-foot trailers.

The article cited the study's key findings which include:

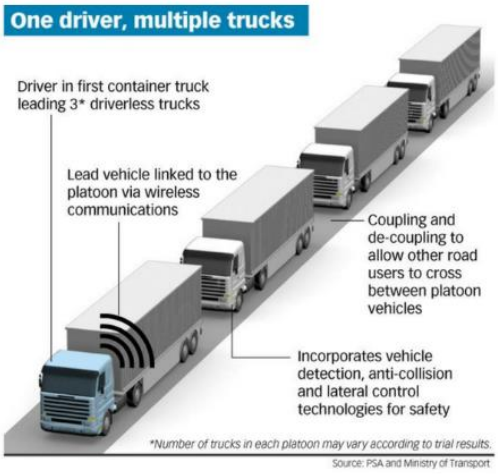
- Widespread adoption of twin 33s would have reduced truck miles driven by 3.1 billion in 2014, avoiding 4,500 accidents annually.
- In 2014, the shift to twin 33s would have saved 255.2 million gallons of fuel and reduced carbon emissions by nearly 3 million tons, and clean-air improvements would be like taking 551,000 cars off the highways.

- A shift to twin 33s would have dramatically reduced congestion, decreasing travel delay time by 53.2 million hours.
- Overall, a shift to twin 33s would save $2.6 billion in transportation costs.

In 2016, Congress sought to adopt a proposal that would have approved twin 33s industrywide. But the proposal was removed from a fiscal 2016 spending bill.

Other innovations include increasing the capacity of trucks. The Transportation Research Board Truck Size and Weight Committee has been busy garnering public and political support for heavier and longer trucks on the road way. A study provided six truck configurations that illustrated a decline in fuel cost and carbon dioxide and nitrogen oxide emissions.

Truck Platooning is in the testing and development stage. This includes vehicle to vehicle communication to form a convoy of trucks which are closely spaced with a synchronized system of braking and acceleration.



Reports suggest that Truck Platooning will soon be adopted in Japan to address driver shortage and improve transportation efficiency. The country intends to demonstrate truck platooning without a driver in the following truck on a public expressway in 2020, said Naohiko Kakimi, director of the intelligent transport system and automated driving promotion office at Japan's Ministry of Economy, Trade and Industry, at a Transportation Research Board meeting in January.

IV. Warehousing and Distribution

The trend of expansion into warehousing and distribution continues as well.

Among the leading-edge trends that are forcing companies to re-examine their warehousing and distribution center (DC) operations, three in particular stand out: same-day delivery, sustainability, and increased regulation.

When using the internet, the U.S. marketplace is hungry for instant gratification. To satisfy that hunger, Amazon, Walmart and other retailers are on a quest for the "holy grail" of distribution—same-day delivery. The online retailing giant's efforts can be seen in its recent decisions to locate warehouses in

large and highly concentrated markets like California, New York, and New Jersey in spite of less-than-stellar business climates and high operating-cost structures. Facing increased taxes from cash-poor states and the coming of a national Internet sales tax, the Web merchants have shifted its DC site selection strategy from locating its fulfillment centers in low-cost, small-market cities in the hinterland to one focusing on proximity to major U.S. population centers. By doing so, the companies have set the stage for offering same-day or next-day delivery to a major segment of the U.S. market.

In the past decade, sustainability and "green" principles have increasingly crept into the mission statements and core values of many corporations. Those ideals are having a direct impact on where DCs are located, what activities they perform, and how they operate.

For example, sustainability and green goals are driving forces behind the growing trend of locating new DCs close to intermodal terminals. Locating DCs near a rail terminal can help shippers reduce their carbon footprint by making it easier for them to incorporate more rail transportation into the supply chain. Rail is recognized as being considerably more "environmentally friendly" than over-the-road trucking. Consider the fact that on average, rail can move one ton of freight 476 miles on a single gallon of gas. This is the equivalent of your SUV getting over 250 miles to the gallon. The U.S. Environmental Protection Agency (EPA) estimates that railroads account for less than 10 percent of all transportation-related CO_2 emissions while also alleviating highway congestion. Rail could get even cleaner if BNSF Railway continues to move from diesel to liquefied natural gas (LNG).

The green movement is affecting not only the location of distribution centers but also what activities they perform and how they operate. Many companies are now receiving and processing more outmoded electronics and print cartridges at their DCs in an effort to reduce the environmental impact of their products. These efforts minimize the amount of waste that ends up in landfills and help customers dispose of unwanted products in an environmentally sound manner.

Another trend affecting distribution center operations is the increase in legislation and regulation. For example, current legislation affecting the trucking industry might tilt the scales even more strongly in favor of distribution centers using intermodal services and locating near rail terminals. Regulations such as the driver hours-of-service rules and mandatory electronic on-board recorders (EOBRs) are helping to drive trucking costs upward. As labor and fuel expenses push overall trucking costs higher, more and more companies are choosing to use less costly intermodal services and locate their DCs closer to intermodal terminals.

As the intermodal sector assumes this leadership role, those DCs that handle food will see an advantage to being located close to an intermodal facility. It is important to note that perishable goods like produce, ice cream, frozen pizza, and fresh fruits and vegetables are now moving inter-modally at record levels.

Although regulation, sustainability, and same-day delivery will all have an impact on the warehousing industry, the overriding issue confronting distribution centers has to do with cost containment. Bottom-line economics still rules the warehouse site selection process. Distribution Centers will continue to find ways of improving the bottom line on the cost side of the ledger which is far easier than on the revenue side.

Even within the same U.S. region, operating costs for a typical DC can vary greatly by geography, and a less-than-optimum location will result in higher costs that could compromise the company's competitive position for years.

In many cases, energy and construction costs contribute greatly to the differences in annual operating costs. It's often possible for companies to address cost containment through their efforts to respond to the three key trends listed above. Locating close to intermodal terminals will help not only with sustainability efforts and compliance with food safety regulations but also with reducing shipping costs.

V. Augmented Reality

Augmented reality (AR) is a concept that sounds far fetched for some, but in effect, could help digitally transform the freight industry. AR is still in the early stages of development, but AR combined with visual learning models could help industries that involve a lot of labor that stands in the way of efficiency.

Consider a long-haul truck drivers while on the road suffers a mechanical issue. Instead of the traditional method of looking for the nearest dealer or local garage, or waiting for a truck technician to reach the truck, imagine AR smart glasses. These glasses provide basic instructions on how to make the necessary repairs allowing truckers to fix minor glitches themselves and get to understand their truck better.

VI. Risk Assessment and Conclusion

With technology and automation comes a new set of risks that the insurance professional must consider. Several factors will need to be considered: cyber security, the shift in liability and changes in underwriting to keep current with technology trends.

In looking at how to underwrite this risk, the underwriter will need some comfort level with— and understanding of—the vehicle’s reliability and functionality. In order to gain consumer acceptance, autonomous vehicles will need to handle situations like construction zones, road and bridge closures, all weather conditions, and more. But if, in certain conditions, the vehicle will not function autonomously, i.e. blizzard conditions, the underwriter will likely want to have a complete understanding of those conditions and their impact on vehicle operation.

The underwriter will also need to understand the shelf life of the autonomous system and what diagnostics are in place to keep the AV running as intended, and will likely rely on those diagnostics to notify the vehicle owner when the vehicle must be maintained or, eventually, replaced.