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WHITE PAPER

The future of transportation management:

Top trends for the next decade

Abstract

In today's hyper-competitive, consumer-focused landscape, the transportation management function has never been more critical. The entire supply chain relies on transportation professionals to keep customer delivery promises, while also meeting financial goals and protecting profit margins. A number of trends over the next decade will continue to keep transportation in the spotlight. This white paper outlines the top 10 transportation management trends that companies will need to address in order to be successful over the next decade and beyond. It also explores some technology enhancements that will help transportation professionals overcome the challenges of tomorrow.

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Introduction

Over the past 20 years, transportation management has evolved from a cost-driven execution function to a strategic enabler, with the goal of maintaining a delicate balance between cost and service. While the adoption rate of advanced technology for transportation management is reasonably high, particularly among larger global companies — and can be referred to as mature — there is still a wide spectrum of opportunity for increased effectiveness and efficiency.

In looking toward the future of transportation management over the next decade, it is important to look at the intersection of need and capability. In the context of transportation, "need" is defined as understanding and responding to the confluence of global trends that are impacting this function — including the evolution of the consumer-centric supply chain, the increased shortage of asset and driver capacity, and the cyclical nature of fuel costs. "Capability" is defined as the emergence of technological advancements and trends such as mobile enablement, increases in memory and processing power, and the availability of real-time situational data.

In an increasingly complex and challenging supply chain environment, transportation has the power to create a strategic differentiation and drive profitability. But it's clear that advanced technology must play a significant role in optimizing this function over the next 10 years. This white paper outlines the major areas in which technology is expected to play a critical role.

2
The consumer-centric supply chain

In the recent history of supply chain management, there may be no bigger revolution than the emergence of the consumer-centric supply chain. With the proliferation of mobile devices and connectivity, consumers are enabled with the ability to search for, compare, and buy goods and services at any time and at any place. Fueled by market disruptors such as Amazon, consumer expectations continue to rise with regard to product assortment, availability and timeliness of delivery. In response, retailers must transform their formerly push-centric supply chains to a pull-based model to adapt to the increase in consumer variability — which requires a new level of transportation resiliency.

2.1
The Uber effect on direct delivery

A key characteristic of the consumer-centric supply chain is the escalating expectation of rapid, direct-to-consumer delivery. In urban centers, next-day and same-day order fulfillment has become a common expectation.

In response, retailers are faced with the challenge of getting as physically close to their customers as possible, often by leveraging stores as potential fulfillment nodes. This shortens the time horizon for order delivery, but it creates the challenge of delivering responsive service while also remaining cost-effective.

The emergence of drive-share services such as Uber might provide an interesting transportation alternative, particularly for intra-day delivery. Retailers can avoid the schedule-driven, static nature of large-scale parcel delivery services and instead tap into more dynamic, real-time local delivery capabilities.

From a transportation management system perspective, the challenges created by this strategy include the accurate tracking of actual deliveries, the opportunity to consolidate multiple deliveries, and the auditing and pro-rationing of costs at the order level. While these are not necessarily new challenges — and transportation management solutions already deal with these issues — there is a new level of complexity based on the sheer number and variability of potential transportation providers.

2.2
Real-time responsiveness across the supply chain

While the notion of the consumer-centric supply chain is often defined as a retail industry problem, it does not only impact retailers. The effects of consumer centricity are felt all along the supply chain continuum, with all participants impacted — including manufacturers, distributors and logistics providers. The increase in demand variability created by consumer centricity — combined with increasing consumer expectations around product availability and delivery — leads to a real need to reduce latency at every node of the supply network.

Supply chain participants have one strong advantage as they seek to improve their responsiveness: the increased availability of real-time data across a broad spectrum of informational domains. Vehicle or vessel global positioning system (GPS) data, advanced traffic models and near-term weather data are all examples of more readily available and consumable information.

Over the next decade, transportation solutions will continue to evolve to incorporate these disparate streams of readily available data, allowing supply chain participants to make more active, more dynamic decisions that reduce network latency. These technology advancements will help provide the increased supply chain resiliency that's needed to support consumer centricity — at a reduced rate of cost that protects profit margins.

3
Supply chain unification

As supply chain practitioners across every industry strive to increase their responsiveness or resiliency while mitigating network costs, there is a growing realization that traditional functional boundaries may not support this strategy. Instead of existing as a series of functional silos, the supply chain environment needs to evolve and support a more unified view across functions.

The transportation domain has already seen some siloes broken down. As recently as 20 years ago, transportation organizations themselves were internally siloed by flow (e.g., inbound versus outbound), by geography, by company division, and, in many cases, even by location. Today, however, we see the creation of transportation "control towers" which aggregate those limited functional perspectives into a more unified view — one that considers shared assets and network synergies.

3.1
Removing planning and execution siloes

Transportation plays a unique role in the supply chain planning and execution continuum. Like warehousing and order management, transportation is centered on the execution of transactions, the delivery of goods, the tracking of movements and the reconciliation of payment. However, transportation also has a planning or optimization component that's similar to traditional upstream supply chain planning domains such as replenishment. This combination of planning and execution constraint awareness presents a powerful opportunity for transportation to play a much bigger role in bridging the barriers created by existing functional silos.

Consider the case of a manufacturer replenishing products into a distribution center. In the current planning paradigm, a technology solution recommends shipments by product across a given time horizon — with the goal of maintaining an optimal inventory balance. Those shipments are then passed, often via a host system, to a transportation solution for possible consolidation, carrier assignment and scheduling.

The challenge with this approach is that it produces a set of predefined shipment quantities which are then slotted into available assets — which typically produces sub-optimal, if not entirely inefficient, asset utilization. By considering transportation capabilities concurrently with the initial replenishment plan, shipments can be created in the right quantities to balance optimal inventory deployment with the optimal use of available transportation assets. We can expect to see these types of intelligent planning scenarios being increasingly adopted in the next 10 years.

3.2
Increased constraint awareness and iteration

The rise of the consumer-centric supply chain has had many logistics implications. We have witnessed an increase in order dynamics, created by such factors as greater demand variability and higher numbers of returns. In general, the supply chain operates at an increased speed today, with many-to-many distribution nodes that place pressure on all participants. Because existing supply chains were originally engineered for the predictable and linear flow of goods, these forces are creating a new level of stress. As a practical illustration, imagine an old garden hose. If the water is turned on at a slow rate of flow, all may seem well — but as the flows become faster, the flaws in the hose become readily apparent. There is no longer an ideal stream.

To overcome the design flaws that are inherent in existing supply chains, transportation capabilities in particular need to become more fluid and adaptable. They must be aware of, and be able to adjust readily to, both upstream opportunities and downstream constraints. In less-mature supply chains, having loads backed up in a warehouse yard was a normal occurrence, managed as a necessary fact of life. However, in today's new paradigm, such a bottleneck can have a notable impact on profitability and speed to market.

Looking ahead, it's critical that transportation systems have a keen awareness of any obstacles that may be formed through the course of execution — including location throughput constraints, dock capacity and modal availability. Moreover, this awareness needs to be product-centric, since there may be important nuances in the delivery needs for certain SKUs. Since transportation is essentially the circulatory system of the supply chain, this function must be optimized in order to ensure an ideal flow across all the various nodes of the network.

To ensure this optimal flow in an increasingly dynamic business world, we can expect transportation solutions to become more iterative in their approach. They will need to plan and replan as conditions change, constantly being able to adapt and refine the flow of transport to balance service and costs in an ever-changing landscape.

4
Increasing utilization and capacity

Over the next decade, transportation utilization and capacity needs will only increase. Transportation professionals will be looking for more creative ways to free capacity across the network and guarantee on-time delivery of goods. They will also need to effectively compete for assets in a more competitive procurement and spot market.

4.1

Managing driver shortages via greater visibility

Shortages in driver capacity will continue to increase the stress on asset availability within transportation networks. As the average age of the driver community continues to rise, the overall availability across common carrier and private fleets will shrink. This will lead to higher costs in the carrier marketplace.

Shippers and carriers will be looking for more dynamic ways to manage driver shortages in regional movements, while also securing flexible capacity in the overall service model for those goods. Shippers will frequently look for carriers who can deliver flexible capacity to meet operational spikes in demand. At the same time, carriers will seek to manage driver shortages in those regions where they offer flexible service commitments.

Early accessibility to information is critical to managing both these challenges. Carriers can plan more proactively if they can view the tactical replenishment needs of shippers far in advance, balancing resources strategically to meet those demands. Conversely, carriers can alert shippers of anticipated resource shortages in advance to minimize service disruptions. Shippers can then react with replenishment planning that delays or expedites planned shipments based on this constraint awareness.

Maturing transportation practices will allow for many adjustments to be made after initial procurement commitments are defined. This requires transportation systems to improve their ability to tie together procurement practices and transportation execution. More dynamic adjustment capabilities can lead to the self-correction of gaps in driver availability, as well as match availability strategically to the overall capacity needs of the dynamic supply chain. Moving forward, transportation management systems need to be self-aware, capable of analyzing the current execution operation and alerting planners and procurement staff about negative trends. In turn, those systems will need to inform procurement practices as part of a more interactive environment, characterized by frequent information sharing and communication.

4.2

Fostering true network collaboration

In order to increase service levels and reduce costs, it's necessary to tactically adjust the demand and capacity of the transportation network. However, this requires a new level of visibility. Carriers can create a more efficient network by exposing capacity dynamically within their operations. Shippers can also realize cost savings by matching their freight to real-time opportunities created by carrier movements. By having this immediate visibility, they can make instant commitments to seize availability and service their expedited, uncovered or opportunistic shipments.

In tomorrow's environment, shippers may be more willing to utilize freight auction capabilities to dynamically capture cost savings, while still serving their capacity needs. Shippers may feel like they are proactively attacking costs as they "cherry pick" carriers in a more dynamic fashion, versus making volume bids where, ultimately, capacity assumptions may not be true — and extra investments might be needed to secure actual delivery.

As technology creates new levels of visibility, carriers have a great opportunity to reduce the number of empty miles in their networks. Carriers will be able to more easily expose availability in their networks and provide real-time visibility to equipment availability — avoiding empty or underutilized trailers. Today, much available capacity is recognized only when it's too late. But in the future, expanded real-time visibility can help both shippers and carriers identify and seize cost-reduction opportunities.

5

Interactive simplicity

As the rate of technology innovation continues to accelerate, user interactivity has taken center stage. Think of the mobile phone. It has undergone a transformation from a single-use device to a central, portable hub for media, communication, business, fitness and a host of other capabilities. Users have been able to learn all this additional functionality intuitively, without the benefit of a training manual. Touch enablement and simple interactivity have revolutionized what we expect from a single technology asset.

5.1

Building in a higher level of intuitive interactivity

Today's transportation management solutions today are characterized by large amounts of data, complex structures and definitions, and user screens packed with information — and supported by intense mandatory training classes. This creates time and labor demands during initial deployment, as well as during ongoing use of these solutions. In addition, user turnover is a major issue, as the time and effort required to onboard a new user is significant.

The next generation transportation management solutions will need to include simple, straightforward user interactivity that's modeled on consumer devices. Enabled on mobile and tablet platforms, new user interfaces will be touch-interactive — and feature an intuitive design that minimizes training requirements.

5.2
Increasing situational awareness

In addition to becoming more intuitive, user interaction will continue to become more analytics-driven. As the availability and consumption of large amounts of data increase, user interfaces will evolve to provide more contextual or situational views. Transportation solutions will guide the user to act in a more directed fashion, minimizing the need for individual ad-hoc decision making.

6
The digitization of transportation

As transportation management solutions continue to evolve, we will see some fundamental changes in the way we work every day. The digitization of the transportation function will create exciting new opportunities for efficiency and cost savings over the next decade.

6.1
Eliminating paper

Transportation management has historically been siloed into modal execution activities, including fleet management, contracting with over-the-road carriers, parcel execution and ocean booking management. In the past, the fact that these systems were electronically connected to vendors, carriers and other partners on an individual basis created a fractured environment. This inefficient situation was only exasperated by the multitude of paper reports generated for basic functions — including bills of lading, proof-of-delivery receipts and freight bills.

As shippers have evolved to create more efficiency in their networks, one of the natural outcomes was the consolidation of these once disparate processes in the same system, at the same time. This reduced paperwork and also supported better management practices via an electronic, digitized system.

As transportation management systems have evolved over time, the digitization of paper transactions has only grown. Today, the availability of all electronic transaction details within a single data store provides much greater visibility to the entire partner ecosystem. Analytical reports on the actuals within the system have eliminated the archaic manual processing of paper transactions.

Shippers today expect modern systems that provide real-time visibility to all network participants who have granted permission to access their information. Transactions should have both electronic and scanned documentation easily accessible in a single system, with an audit trail that tracks the net change in operational transactions over time. We can expect this digitization trend to continue over the next 10 years as technology keeps evolving.

6.2

Onboarding carriers via social networks

Consumers have mastered the art of easily onboarding new friends and partners via social media platforms. However, in the transportation business, it is not nearly as simple and seamless to "friend" or network with colleagues and trading partners. In the future, new collaborative networks will need to form that make it easier to form and maintain relationships. Easier onboarding processes will help reduce the cost and time it takes to provide partners with visibility to shipments, carrier capacity and in-transit information.

One historic challenge has been the complex legal issues surrounding contractual relationships between businesses. Cost assumptions, commitment to capacity and master agreements form the underpinning of business relationships today — and, in an effort to secure this information, today much of that is administered via a manual, red-line editing process managed by the legal staff.

However, the procurement-to-contract phase can take months to execute. Also time-consuming are the processes of providing updates on tenders and in-transit status. There are frequently delays in processing financial transactions. As the dynamics of a business change more frequently in today's environment of fluctuating demand and capacity, these inefficiencies stress both carriers and shippers. There is a great opportunity to streamline business operations through easier carrier onboarding to a shipper's collaborative network.

An easier onboarding process is essential to the expectations of a more modern workforce that expects ease of communication — as well as software tools that make relationships easier to manage. New onboarding processes need to streamline the signoff procedures associated with procurement and execution relationships. Carriers should have a single portal to gain access to all information related to procurement, tactical capacity manipulation, tender requests, track-and-trace activities and freight financials. Carriers should also have a common area where capacity can be exposed to multiple shipper trading partners via a single social network.

By using more social tools, carriers will not have to be trained on multiple transportation management systems. They can easily leverage a visibility and collaboration layer that fosters these relationships in a more productive manner.

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Moving toward the future

As competition increases and consumers become more demanding, the transportation function will only become a more vital part of the supply chain network over the next decade. The entire supply chain will look to transportation professionals to deliver the last mile in customer service, while supporting the overall profitability of all supply chain participants.

The good news is that transportation management solutions continue to improve to meet the needs of tomorrow. By increasing real-time visibility across comprehensive transportation resources, these solutions will support a new level of speed and agility — while providing a factual basis for the decisions that deliver the most profit, without compromising service. For companies that keep pace with technology improvements, and match them with new ways of working, a significant competitive advantage is possible as we move toward 2026.

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