



Point of view

Reimagining Logistics in Automotive Industry

Overview

The entire supply chain, from product design, manufacture, test & delivery of goods to the end customers, is vital for automotive Original Equipment Manufacturers (OEMs). Here, delivering the right product at the right time to the right customer also becomes a critical deliverable to achieve.

Logistics is critical to OEMs' success, from bringing raw materials to the manufacturing unit or its warehouses and delivering finished goods to the dealers on time. The former is thus termed as 'Inbound logistics' and the latter, 'Outbound logistics.' Both processes are distinct, complex, and key to the production and delivery of finished goods.

In a normal business situation, manufacturing units would require a steady supply of raw materials in a 'Just in Time' approach saving the warehouse storage, associated transport, and labor cost. However, when there is mass production to meet high demand, say during holiday seasons, supplies need to be received in the warehouse, tracked, and distributed to the manufacturing unit. The system needs to be Agile to meet the expected delivery. OEMs generally link up with Third-Party Logistics Providers (3PLs), who specialize in transportation management and can handle the logistics pattern's by scaling up and scaling down.

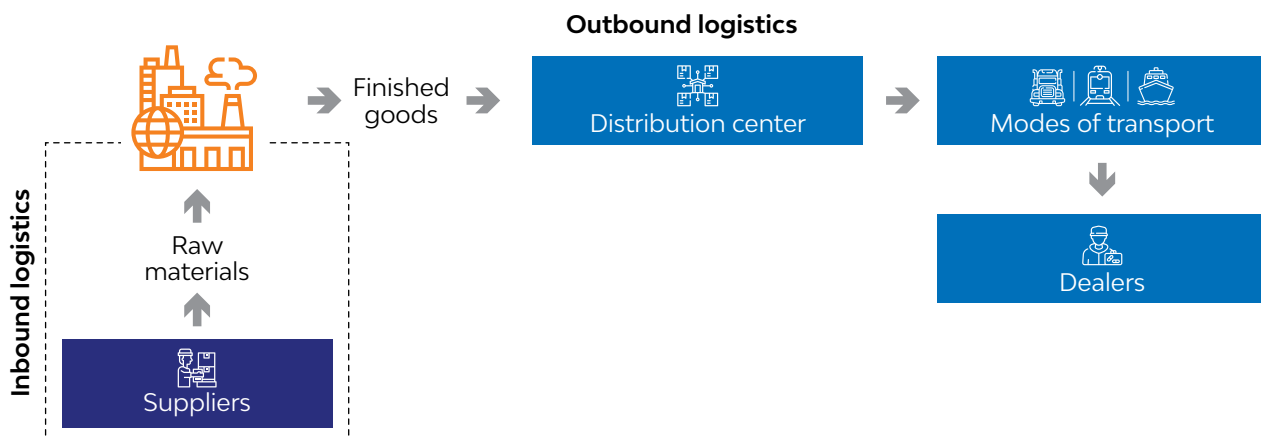


Fig. 1 Inbound/Outbound logistics

Outbound logistics are designed to deliver finished products to dealers who, in turn, deliver them to the customer. In the general process, finished goods are transported to a distribution center, stored there for a short duration before transportation to pre-defined destinations to dealers. Transportation of finished goods involves multi-modal transports through road, rail, and ship, as per the efficient route to the destination. This often involves coordinating with multiple 3PLs chosen for particular routes and modes of transport, thus widening the distribution network.

This paper looks at key challenges faced by OEMs in managing inbound/outbound logistics, overcoming certain challenges, and the available solutions.



Challenges faced

Both inbound and outbound logistics have certain common challenges such as managing multiple carriers, optimized routes, tracking freight movement for visibility of vehicles in transit.

Multi-modal routes for carriers have become very common in logistics nowadays for various reasons such as effective routes, supplier availability, material quality, and coverage of diversified locations of both suppliers and dealers. Several carriers deliver raw materials to the manufacturing plants and transport finished goods to dealers and customers. Not maintaining proper communication on the freight movement and delivery time would lead to delays in goods delivery. It is essential to have an integrated platform between carriers to pass on real-time communication of pick-up availability, destination, freight size/quantity, etc.,

Another key concept we will review is route optimization. Without optimizing routes, the OEM will pay high transportation costs to carriers and miss out on timely delivery. With inbound logistics, this could impact the production line, whereas, with outbound logistics, the commitment to a dealer could be missed, vis-à-vis to end customers that may even lead to loss of trust in the brand.

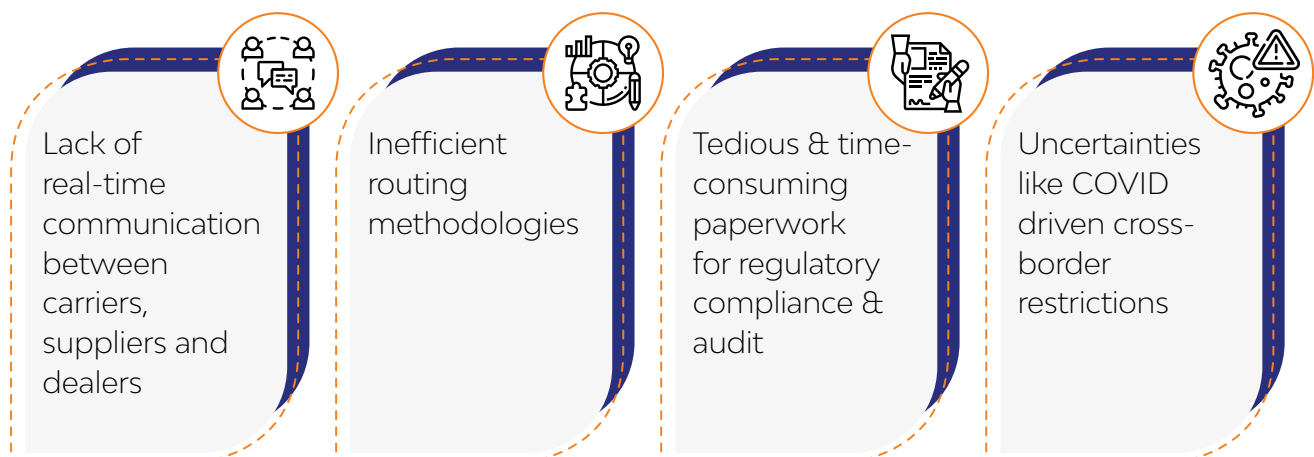
Route optimization ensures timely delivery of the goods and helps in reducing the fuel cost. The digital disruption, IT enablement, Industry 4.0 practices have helped the industry with optimized routes.

Besides route optimization, logistics also have other challenges such as multiple transactions, heavy paperwork involved throughout the administrative and financial processes for import/export, regulatory compliance, and auditing.

Traditional ways of transportation management pose a threat to the visibility of vehicles in transit where improper tracking of consignments can lead to error-prone invoice processes, uncontrolled freight transit costs, etc. Transportation Management Systems (TMS) provide a solution to overcome such inefficiency to better manage transportation, billing, payment procedures, and support auditing needs through effective data capture and reporting.

COVID has had a massive impact and has significantly posed several challenges to the Logistics sector and other industries. Some of the challenges faced were COVID restrictions on movement and border control between states and countries, stagnant freight/containers in ports and airports, unpredictable road transport due to varying situational controls faced by states, cities, and countries. However, this was addressed by converting passenger flights to air cargos, utilizing limited sailing on the ocean, and shifting preferences to rail freights considering faster delivery time than road transport and less cost over Ocean/Air cargos.

Companies with robust technology advancement providing better visibility of transportation, monitoring, and control over digital systems bounced back faster than other players still using traditional methods. Some actions included identifying alternate routes, choosing an alternate mode of transport, and having effective control, thus providing the necessary information to make timely decisions throughout transit.



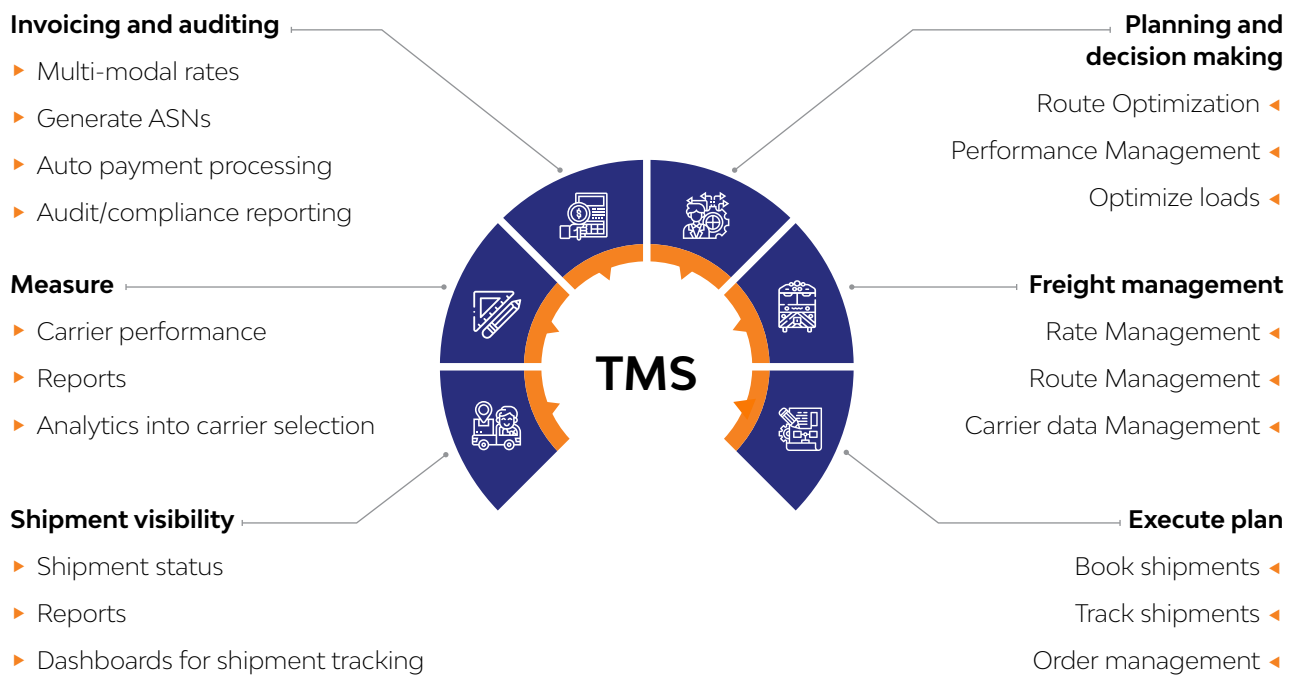
 **Solution**

The Logistics sector is in the midst of a technology-driven revolution. With the way OEMs have started going digital with manufacturing, the next best step forward seems to be to digitalize logistics and supply chains. It is essential to digitalize the entire process from procurement to delivery of finished goods to gain the overall benefits of the Digital disruption in the current era.

Let us talk about TMS here. TMS is a platform designed to streamline the transportation process by implementing transportation solutions with advanced technologies. TMS helps in optimizing the routes, collection of data for continuous improvement, thereby enabling on-time delivery of freight. TMS also provides visibility on the overall transport operations, trade compliance, and documentation.

TMS majorly comprises rate management, carrier/freight management, order management, tracking shipments, invoicing, and auditing.

The below diagram showcases the primary functionalities of a TMS system and key processes associated with the system.



The key benefits of deploying a TMS include:

- ▶ Cost reduction by optimizing route and better planning
- ▶ Real-time shipment visibility in a single platform
- ▶ Integration of carriers with effective communication management in the supply chain
- ▶ Continuous improvement using a data-driven transportation system enabling network optimization and greenfield optimization
- ▶ Dashboards to track the performance of all the stakeholders involved, Digital governance of carrier performance, and route management efficiency
- ▶ Enhanced customer satisfaction

TMS also uses Telematics that forms the key technology factor in data collection through the connected car concept.

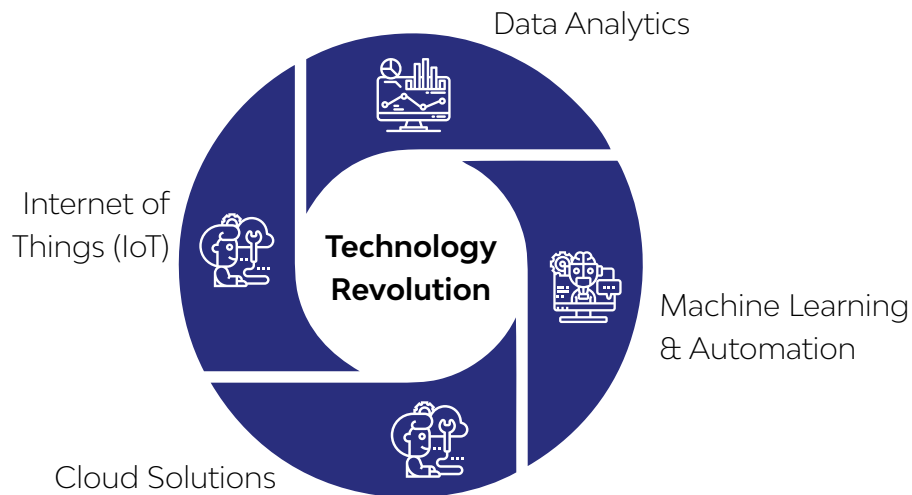
What is telematics?

Telematics refers to the use of wireless devices and “black box” technologies to transmit data in real-time back to an organization. The telematics-controlled unit installed in the vehicle collects diagnostic information, vehicle speed, and real-time location using GPS technology and transmits the information to the Internet of Things (IoT) cloud. The communication with the cloud server is established using a cellular, LTE, or GPRS network.

Transportation Management systems use Cloud services to handle huge volumes of data collected through IoT with the connected cars feature. Data is analyzed by running it through result-oriented machine learning algorithms for analysis and prediction.

TMS is available either as a standalone software or packaged with Enterprise Resource Planning (ERP) and Supply Chain Management (SCM) suites.

There has been a tremendous increase in the adaptability of TMS solutions by OEMs/3PLs, which has significantly started accelerating the growth of TMS market. It is no surprise that cloud-based solutions and Software-as-a-Service (SaaS) are among the primary factors that have triggered this growth.



Digital technologies have helped overcome challenges faced on a day-to-day basis by logistics and automotive companies. Data integration between carriers has helped effective communication. The Implementation of smart mobility throughout the logistics chain, in OEMs, carriers, dealers, and warehouse management, has shown significant improvements. Mobile apps serve multiple purposes such as on-demand/automated guidance, resolving maintenance issues in real-time, and communication management. Moreover, enabling technology-oriented tracking has helped reduce the carbon footprint, an essential goal every country of the world is pursuing.

Recently, automotive companies have also started opting for logistics carriers operating with the 'Shared Truck load' model, wherein more than one supplier shares truck space. Such 3PL players are usually equipped with sophisticated technologies as well, bringing cost-effective, optimized route models which can integrate with the OEM's systems, providing transparency with monitoring dashboards.

There is no limit to improvement here, as the world keeps moving forward with future inventions resulting in the optimization of resources. The technologies listed below can be key parts of the logistics industry

- ▶ Electric Vehicles usage for heavyweight logistics transport to cut down costs incurred
- ▶ Deployment of Autonomous Vehicles in logistics would cut driver and supporting cost expenses, along with significant safety improvements

Investment in technology is the need of the hour; OEMs and Logistics providers need this to be effective, efficient and develop.

Conclusion

It is essential for Automotive OEMs and 3PL providers to enable a technology-driven approach to their operations to significantly reduce cost, increase efficiency, enhanced tracking, and control over operations. A reduced carbon footprint will result in considerable customer satisfaction and sustainment in the current competitive and rapidly changing industry situation. Smart Manufacturing supported by smart logistics over a responsive smart supply chain environment will essentially pave the way for benefits to the manufacturing and logistics industry. This mode would ensure readiness to adapt to any disruption in the market, which is key to sustenance and improvement.

About the Authors



Seshadri V

Associate Director - Projects, LTI

Seshadri has over 17 years of experience in the Manufacturing sector and is currently responsible for delivering key digital transformation programs for Automotive manufacturing clients in North America. He is a certified Project Management Professional and has strong program management experience, spanning across multiple geographies. His areas of expertise include customer centric program delivery, people management, Risk management and leadership development.



Debashish Bal

Senior Specialist - Cloud Services, LTI

Debasish has 14+ years of functional consulting experience in Microsoft Dynamics AX. He is currently responsible for delivering cloud consulting & implementation projects for global clients. His areas of expertise include Microsoft Dynamics 365 Finance, SCM and Operations Modules. He also holds an MBA in Finance.

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