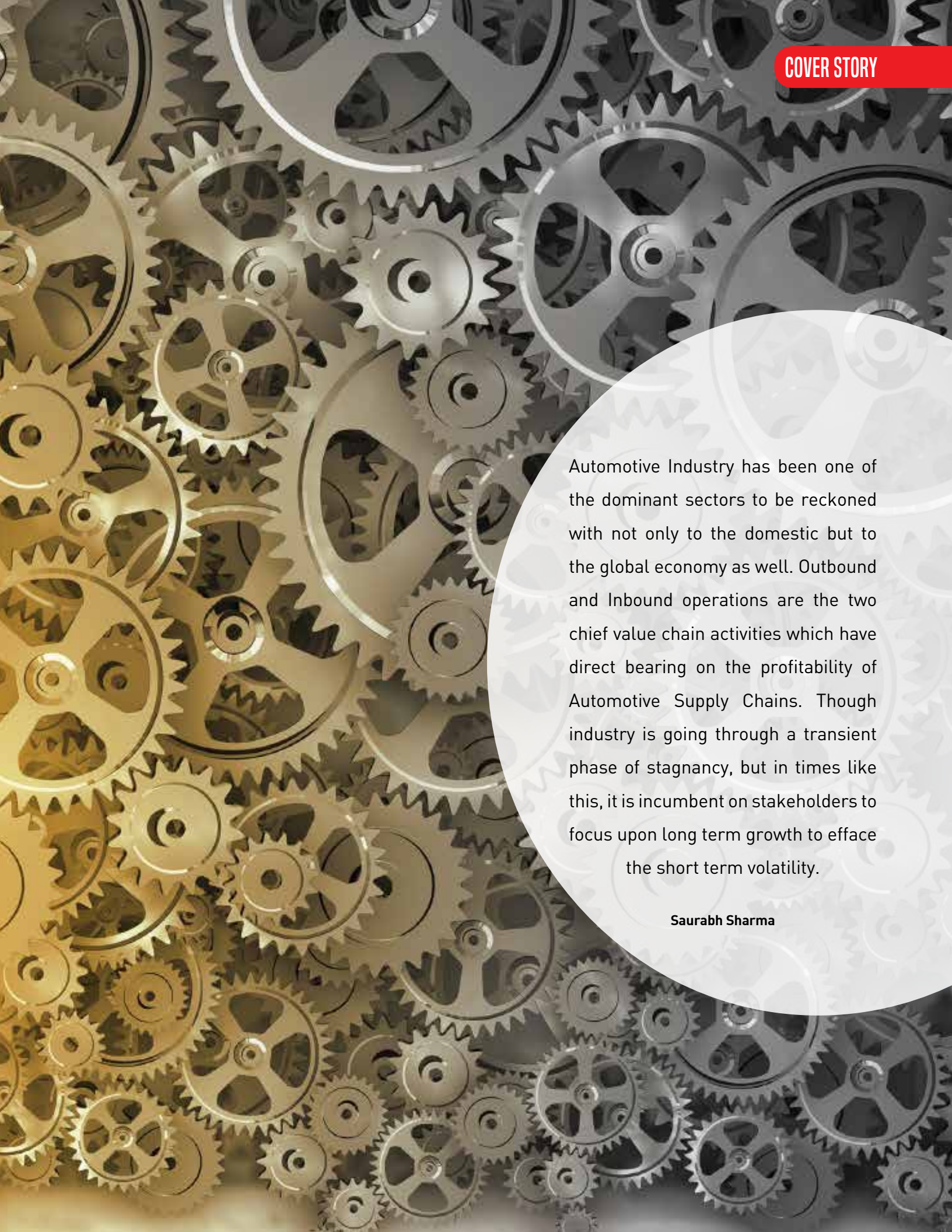
# DRIVING PERFORMANCE AND PROFITABILITY IN AUTOMOTIVE LOGISTICS



Automotive Industry has been one of the dominant sectors to be reckoned with not only to the domestic but to the global economy as well. Outbound and Inbound operations are the two chief value chain activities which have direct bearing on the profitability of Automotive Supply Chains. Though industry is going through a transient phase of stagnancy, but in times like this, it is incumbent on stakeholders to focus upon long term growth to efface the short term volatility.

**Saurabh Sharma**

The automotive industry has undergone more profound changes recently than it has for many decades. Today, automotive supply chains have more significant part to play in order to ensure the sustainable growth by averting the environment of uncertainty created by short term volatility. Most of the Original Equipment Manufacturers (OEMs) view India as the strategic market for future; consequently the competition is bound to be high octane.

## Logistics flow in Automotive Industry

The influence of logistics on the automotive industry can be discerned by analysing the nature of the logistics channels present. This connection between the automotive industry and competitiveness through its value chain as a result of country's logistics aspects play an important role in the strategic positioning of the local industry.

Components and raw material can be sourced from all over the world as well as locally. The supply chain can be short and less complex for those that are sourced locally, or complex and more time consuming for those which have to travel long distances. Besides the different cost factors, it also requires a variety of modes of transport to be used. The most frequently used modes for local supply are road and rail, and for international supply, sea and air is added prior to road and rail. This also holds true in reverse for the flow of finished product.

The common practice in the automotive supply chain for most of the automotive companies is that every chain is mainly tied to

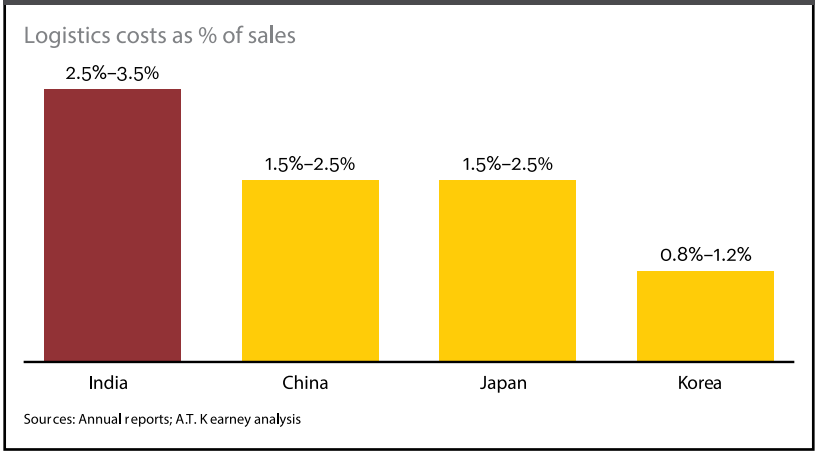
It's high time we started prioritising freight, and for which I have also requested a policy shift at the center. We need a system to track cargo shipments, by having improved timetables to monitor the incoming and outgoing of the ships. We also need to work closely with the Railway Ministry to make the operations profitable for licenses.

**N SIVASAILAM**
Special Secretary,
Department of Logistics,
Ministry of Commerce, GoI

**Inbound and Outbound operations are the key factors in a value chain which drive the optimality in automotive supply chains. As every company employs a range of activities to bring its products to market, the idea of a value chain is to depict how customer value accumulates along a chain of activities that lead to an end product or service.**

Over the last few decades, owing to sky-rocketing demand, the automotive industry in India has shifted predominantly into global competition but with the fluctuating production volumes and incessant increase in the cost of finished goods, the efficiency of outbound vehicle distribution operations has been affected as well. At this hour, optimisation of logistics operations through consolidation and collaboration among OEMs has tremendous potential to contribute to the profitability by lowering the cost of transportation, in-house inventory, transportation time, and facility costs. The collaboration in the intra- and inter-OEM outbound logistics operations is a critical area that the auto manufacturers need to pay attention to trim their cost.

**Logistics costs are high for India's automotive supply chain**




Sources: Annual reports; A.T. Kearney analysis

## Shifts in trends are on the horizon for India's automotive industry

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|---|---|---|
| **Tailored supply chains**<br>Shift from tax arbitrage to operational efficiency driven tailored supply chains, stock transfer to predetermined order play | **Logistics evolution**<br>Shift from ad hoc need-based footprint to scale-driven warehousing and logistics | **Focus on cash flow management for exporters**<br>Shift from export exemption-based structure to refund-based regime |
| **Reduced channel inventory**<br>Shift from multiple levies to one borderless marketplace with improved lead times | **Marginal reduction in inbound logistics costs**<br>Change in sourcing models with ease of expanding the vendor base beyond state borders where needed | **Modified aftermarket distribution models**<br>Shift to revamped distribution to ensure better availability and improved service levels at lower costs |

Source: A.T. Kearney analysis

With the ongoing impetus on expansion and development of different modes of transportation, we have to leverage multi-modal transportation employing containers, rail wagons and coastal shipping. For optimising outbound logistics, we should consider lot size (sell few, buy few), order replenishment, mint condition, cost of logistics, network design, medium to long term plans and carrier optimisation.

**JASJIT SETHI**
CEO, TCI Supply Chain Solutions

forecasts. The vehicle manufacturers must match supplies with demands from the first chain- raw material suppliers, to the last chain- car buyers. The variation or uncertainty of demand due to forecasting is produced from chain to chain causing bullwhip (when forecast leads to supply chain inefficiencies) effect. The new direction for automotive supply chain is still based in part, on the forecast and, in part, on the capable and responsive supply chain with a greater strategic emphasis, and subsequently, on the logistics operations. The current systems of the automotive industry mostly rely on build-to-forecast and/or build-to-delivery.

### Competitive advantage and the value chain

It's a well established fact that Inbound and Outbound operations are the key factors in a value chain which drive the optimality in automotive supply chains. As every company employs a range of activities to bring its products to market, the idea of a value chain is to depict how customer value accumulates along a chain of activities that lead to an end product or service.

The value chain approach can be used by companies or industries to better understand which part or parts of their value chain are yielding the greatest competitive advantage. Value Chain marks distinction between primary and secondary or support activities. The primary activities include those activities that are directly related to the delivery of the final product or service, which mainly comprise Inbound and Outbound Logistics.

### Inbound auto supply chain Requirements

Considering the humongous set of detailed logistics requirements for an automotive supplier, the real key is that in addition to optimising transportation and logistics costs, full inventory visibility and control is of foremost importance. One needs to wonder how an optimal level of analytics, visibility, and transparency has been provided using legacy systems.

**In India, the auto sector along with auto components grab the highest share of the logistics industry which is over 40 per cent. The APAC region constitutes a major chunk of global automotive logistics with over 50 per cent of market share.**

**The challenge for supply chain professionals will be to build a supply chain that is prepared to manage long-term growth but is also flexible and responsive enough to handle short-term volatility.**

For optimising supply chain operations in order to increase the profitability of the system, businesses must choose shipping option that is cost-efficient and ensure the goods aren't damaged in transit and delivered within the allotted time frame. Besides, following JIT concept helps ensure availability and reduce inventory cost, apply EOQ and MOQ.

**SENTHIL KUMAR D**
Lead- Sales Distribution & Logistics- LCV, Ashok Leyland

Logistics requirements include the determination of carrier and related routing instructions in order to effectively manage inbound freight through the consideration of multiple factors including supplier location, product volume, packaging, transportation costs, and lead time.

☛ **Lead Time-** For most supply strategies such as Just-in-time (JIT) supply, the supply chain needs to be relatively short to support low lead times. It is supplier's responsibility to set shipping window times in conjunction with the manufacturing plant materials personnel and the carrier to ensure delivery by the date shown on the release.

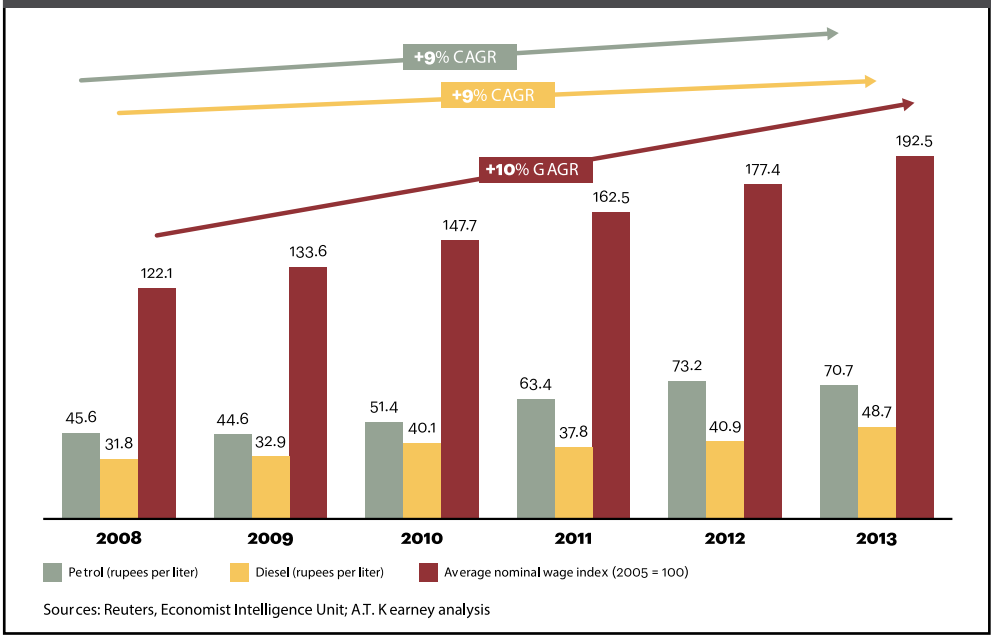
☛ **Analytics and visibility-** Carrier information must also be included in the supplier's Advance Ship Notice (ASN) transmission to allow for trace-ability and to ensure supplier compliance to routing instructions.

☛ **Technology Advancement -** A key role of newer technology is to ensure that scheduled information from multiple customers in multiple regions with various production systems can flow accurately and consistently into a supplier's internal business systems to streamline processes and make it easier to react quickly.

☛ **Authorisation-** Authorisation must be obtained by the supplier from the appropriate receiving plant materials personnel. Unauthorised expedited freight may result in debit to the supplier to compensate for excess freight charges and/or administrative fees.

Underscoring the need to grasp the requirements of automotive logistics, **Prem K Verma, Project Leader - Distribution & Logistics Strategy, Tata Motors** says, "The Industry's vision should be to facilitate need-based interactions for developing a better understanding of automotive logistics and their requirements. If the automotive industry wants to contribute to over 12 per cent to India's GDP, as part of its vision under the 'Automotive Mission Plan' (2016-26), it needs to optimise its resources."

## Rising fuel prices and wages will drive up automotive logistics costs




Sources: Reuters, Economist Intelligence Unit; A.T. Kearney analysis

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**PREM K VERMA**
Chairman, Project Leader - Distribution & Logistics Strategy, Tata Motors

## State of Outbound Logistics

Currently, most of the automotive OEMs operate their own outbound logistics network. The outbound logistics operations form the last step of the three main processes- order receiving from the dealers, manufacturing vehicles at the plants, and the last-mile transportation of the finished vehicles to the dealers. The automotive industry has one of the highest multiplier effects and many industries are allied to its fortunes. Automotive logistics is a vital cog in the overall functioning of the automotive manufacturing machinery.

Since outbound logistics operations commence with the very moment of receiving an order, and then draws on further from warehousing process to the final delivery at the customer's end; it is rife with many speculations with regard to the choice of distribution channels and available delivery options. Over the course of time, organisations have realised the overhaul they require in order to enhance the profitability and efficiency of supply chain operations.

In India, the auto sector along with auto components grabs the highest share of the logistics industry which is over 40 per cent.

The APAC region constitutes a major chunk of global automotive logistics with over 50 per cent of market share. According to a leading report, the region has the highest growth rate of 7 per cent and is expected to reach USD 110.9 billion. This growth forecast is on the back of rising vehicle production from APAC countries such as China, India, Japan, Thailand and Korea; which are also touted to be the next export hubs.

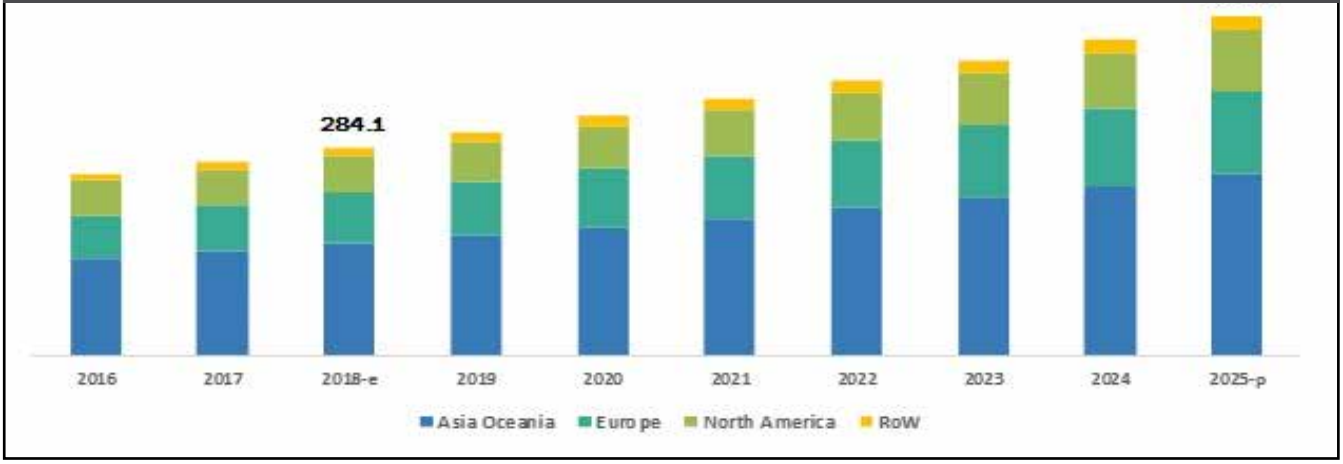
## Multimodal Transport vs Distribution Network

The vehicle distribution network of an automotive company consists of all activities required to deliver finished vehicles from the assembly plants to the dealers. The planning, scheduling and distribution of the vehicles to transshipment facilities such as Mixing-Centers and Ramps and to the dealers are a complex network flow problem.

According to **Navneet Shrivastava, Head of Supply Chain** at **Jay Bharat Maruti**, "As the Outbound Logistics involves the processes of transferring and storage of products, and how related information flows from the end of the production line to the firm's customer, this segment of logistics rely profoundly on transportation and distribution management."

**It is critical to have tailor-made supply chains for each region while monitoring forecasts and order-to-delivery.**

**Automotive logistics market, by region (US$ Billion)**



The life cycle of spare parts is longer than that of finished products and the total number of Stock Keeping Units (SKUs) is very huge.

While measuring the effectiveness and cost of supply chain, organisations will need to set up and monitor KPIs that give visibility of cross-functional activity as well as those applicable to individual supply chain components. The areas where KPIs will be necessary are order capture, inventory management, supplier management and warehousing.

**NAVNEET SHRIVASTAVA**
Head, Supply Chain,
Jay Bharat Maruti

Supply chain management of spare parts is even more complicated than that of finished products. The complexity of the parts business is generated by its own unique attributes. The life cycle of spare parts is longer than that of finished products and the total number of Stock Keeping Units (SKUs) is very huge. Additionally, the demand for parts is relatively unstable and difficult to forecast. All of these pose enormous challenges to parts planning, purchasing, ordering and logistics, among other operations.

Talking about the optimisation of supply chain operations in order to increase the profitability of the system, **Senthil Kumar D, Lead- Sales Distribution & Logistics- LCV** at **Ashok Leyland** enumerates certain key factors:

- Getting supply plan in line with manufacturing/customer requirements and scheduling it accordingly
- Keeping warehouse which is managed by 3PL near to OEMs or the end consumer to enable supply timely
- Businesses must choose shipping option that is cost-efficient and ensure the goods aren't damaged in transit and delivered within the allotted time frame
- Following JIT concept to ensure availability and reduce the inventory cost, apply Economic Order Quantity (EOQ) and Minimum Order Quantity (MOQ)

Emphasising on the indispensable need of tapping the multimodal transportation **Jasjit Sethi, CEO, TCI Supply Chain Solution** explains, "With the ongoing impetus on expansion and development of different modes of transportation, we have to leverage multimodal transportation employing containers, rail wagons and coastal shipping. TCI has already been operating full racks since 2007 to serve its automotive clients and exploring other promising avenues like Ro-Ro shipping, keeping up with the objective to reduce per CBU/Km cost for clients."

"For optimising outbound logistics, we should consider lot size (sell few, buy few), order replenishment, mint condition, cost of logistics, network design, medium to long term plans and carrier optimisation. The only way to win is by working together and respecting the ecosystem," says Sethi.

Multimodal Transport Management Systems (TMSs) are catching up against traditional single mode transportation. The automotive industry must leverage multimodal transport to achieve efficiency in outbound logistics and reduce transportation costs.

The current state of logistics in the Indian automotive sector is highly skewed towards roadways. Finished vehicles are transported

**OEMs that develop shared goals and objectives with strategic suppliers can enhance the aftermarket supply chain.**

Owing to both vehicle import and export requirements from almost every continent, automotive finished vehicle transportation uses ocean, rail and road modes extensively. Every mode of transport has led to the development of custom equipment for vehicle transportation. Ocean carriers have developed multi-level roll on-roll off (Ro/Ro) vessels, also known as Pure Car Carriers (PCC).

directly from the factories to the dealers on specially designed car-carrier trailer trucks. **Dr Saurabh Chandra, Associate Professor, Operations Management Area, IIM Indore** suggests the anchorage of untapped opportunities in maritime logistics. "India has a long coastline, which makes it amenable to usage of coastal shipping for bulk movement of cargo as an environmentally friendly mode

India has a long coastline, which makes it amenable to usage of coastal shipping for bulk movement of cargo as an environmentally friendly mode of transportation. Automotive manufacturing clusters have evolved in Northern, Western and Southern parts of India. However, the automotive manufacturers primarily use road transportation as a means of outbound logistics of finished vehicles from the factories to the dealers.

**DR SAURABH CHANDRA**
Associate Professor,
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of transportation. Automotive manufacturing clusters have evolved in Northern, Western and Southern parts of India. However, the automotive manufacturers primarily use road transportation as a means of outbound logistics of finished vehicles from the factories to the dealers," says Chandra.

**N Sivasailam, Special Secretary, Department of Logistics, Ministry of Commerce** is counting on the potentialities prioritising freight would offer, and for which he has requested the center for a policy shift. "We need a system to track cargo shipments, by having improved timetables to monitor the incoming and outgoing of the ships. We also need to work closely with the Railway Ministry to make the operations profitable for licenses. The inland port at Pandu in Guwahati has railway and road connectivity as well as a port facility which can provide immense opportunities for auto industry's development and employment. The Brahmaputra, which is more than 900km long, offers huge scope for providing logistic solutions for movement of goods across domestic and international channels," says Sivasailam.

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## KPIs and complexities in Outbound Logistics

Key Performance Indicator (KPI) manifests the schedule adherence of the OEMs with respect to original order promise date at the time of order acknowledgement. However, it takes more than mere optimisation to achieve the schedule adherence. The factors affecting delivery schedule start right at the time of sales planning and cut across the procurement and manufacturing process.

Analysis of various outbound logistics KPIs can be used to improve On-Time Delivery (OTD) performance and provide closed-loop feedback to the planning process. This has a direct bearing on capacity planning to inform and keep production and logistics requirements in alignment with the organisation's sales and marketing targets.

Elucidating the importance of monitoring the KPIs, Shrivasta informs, "While measuring the effectiveness and cost of supply chain, organisations will need to set up and monitor KPIs that give visibility of cross-functional activity as well as those applicable to individual supply chain components." Shrivastava says the following areas are those where KPIs will be necessary.

- Order Capture
- Inventory Management
- Purchasing and Supplier Management
- Production/Manufacturing
- Warehousing
- Transportation

Managing the logistics involved in moving finished vehicles from factory to dealers (or, in some cases, directly to customers) requires an extensive transportation


and intermittent storage network. Vehicles are transported via road (trucks), rail and ocean modes. In cases where multimodal transportation is used, intermediate storage facilities are often used.

Besides, the dependency of automakers on the carrier companies for the transportation of finished vehicles from the origin to the destination is yet another matter of concern for OEMs. This trend is also motivated by the increased cost of long haul trucking associated with increased oil prices and driver shortage.

**R S Kapoor, Vice President, Maruti Suzuki India** points the impediments associated with the transportation of produced commodities, "Despite several initiatives being taken up to improve rail growth, many factors are hampering the growth of the same, such as low turn around time and lack of adequate infrastructure in maintaining Automobile Freight Train Operator Scheme (AFTOs). At Maruti Suzuki, we have set an ambitious target of allocating 30 per cent of our produce by trains in the next five years."

## Curbing supply chain cost

Today, because of the competitive market, automobile companies are bound to focus on the product cost in order to sustain their presence in the market. Companies emphasise on many initiatives like Integrated Cost Reduction/Integrated Cost Management/ Value engineering. Out of many verticals where Integrated Cost Reduction can be applied, let's emphasise on logistics. The very first concern, from the beginning of the supply chain where the decision is made as to where material will be sourced from, it has also become more prevalent that global sourcing by multinationals head offices makes these decisions.

Cost of sourcing and transporting the raw material and components which add up to the logistics costs must be taken with alacrity by supply chain professionals. **D K Rai, Director Automotive, CHEP India** observes, "Optimising or lowering transport cost is not about reinventing the wheel. It is about doing the little things that can really add up. Cost incurred on delivery or pick-up between a supplier and several manufacturing plants cannot be eliminated, but making better use of return trips by eliminating empty lanes can add up to big savings over time."

Rai says that CHEP has redefined the way automotive components are handled through the supply chain. Automotive manufacturers and their suppliers collaborate to create a seamless eco-system based on

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**D K RAI**
Director Automotive,
CHEP India

**Logistics plays a major role in order to reduce the cost of the product without reducing the material or process cost. Optimised logistics model becomes successful if it satisfies the demand and supply equation.**

Web-based IT systems are now used by OEMs and 3PLs alike for better visibility into transportation and warehousing facilities.

Transportation cost also increases due to fluctuating fuel prices and toll, warehouse cost and unplanned inventory cost which eventually result into increased cost and lack of financial performance. Outbound operations contribute a major portion of logistics revenue budget. Production and transportation lead time fluctuation influences a lot to maintain proper inventory. After eliminating practical issues like vehicle utilisation factor and cost/component, finally a workable model with a list of assumptions and considerations can only enhance the revenue benefits to the organisations.

## Leveraging technology trends

With increased investments in IT infrastructure, most OEMs now want their 3PLs to provide vehicle tracking information using their vehicle identification numbers (VINs), right from the factory to dealer deliveries. Since vehicles change hands at many locations and handlers, information is often lost or not available with the OEMs. Web-based IT systems are now used by OEMs and 3PLs alike for better visibility into transportation and warehousing facilities.

Automotive industry expects end-to-end visibility of the processes which their product undergoes, says **Rajesh Kapase, Director- IT & Special Projects, Spoton Logistics**. "Today, in order to accomplish these goals, continuous improvement in global supply chain execution has become a core supply capability required by most automotive OEMs. Strategies around lean replenishment and logistics must be deployed to accomplish performance goals, many of which may be required to remain in good standing. Executing these strategies requires manufacturers to fully leverage the potential of today's innovative network-based supply chain systems and processes," observes Kapase.

Kumar D enumerates as to how the revolution in AI and robotics is revamping CHEP's returnable packaging solutions that helps in cost reduction. "Our Collaborative Transport Solutions can save money and minimise the impact of customer supply chain on the environment. Our expertise helps customer carry more product on every truckload. We use software modelling to determine the optimal configuration for trucks, and then we conduct field tests to confirm these computer-generated recommendations. Optimised loads put fewer trucks on the roads, which in turn reduces customer costs, fuel consumption and eventually, CO2 emissions," informs Rai.

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Logistics plays a major role in order to reduce the cost of the product without reducing the material or process cost. Optimised logistics model becomes successful if it satisfies the demand and supply equation. An optimised distribution network can significantly help in reducing the over supply chain cost of an organisation, says Sethi. "TCI SCS 'Five Forces Model' encompasses crucial factors like taxation elements, logistics network , response to customer, location of OEM plants and the overall supply chain cost to design a network. Keeping in mind OEMs' unique needs and priorities, we take up to design and roll-out an agile and robust distribution network," says Sethi.

the auto supply chains in the new era:

- Track and trace of the material through GPS and SIM technology which ease out tracking of the trucks and individual consignments
- Monitoring vehicle performance through device which is enabled for engine performance and alerts for service
- Accuracy on route travel and measure distance
- Chip technology for indenting the en route destination
- Software enabled device for POD

Offering an insight into innovation for improving the efficiency, Rai explains, "The need is to deploy small but innovative practices to bring in optimisation. Adhering to standardisation, identifying opportunities to collaborate and prioritising sustainability are the steps to go about it. The starting point can be making the inbound supply chain more efficient by introducing the systematisation of packaging. At CHEP, we combine physical platforms with IoT technologies through BXB digital to go beyond traditional boundaries and provide a more connected, intelligent and efficient supply chain."

## Looking ahead

Many OEMs and some leading automotive supply chain oraganisations have taken robust initiatives to enhance their after market value. These include implementing various stages of pull based replenishment and spare parts branding with the assurance of full coverage throughout the distribution network. Suppliers and OEMS will need a consolidated and world class supply chain environment like dedicated vendor managed spare parts warehouses at key nodes of network, efficient multimodal transportation and reliable information systems in order to realise the competitive advantage to the fullest. CC

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