

A large, modern white warehouse with a long row of loading docks. Several white delivery trucks are parked at the docks. The scene is set in a clear, bright environment. The image is framed by blue geometric patterns in the corners.

Uncovering Value In INBOUND LOGISTICS

Building an optimized inbound logistics network and unlocking dynamic cost savings for a global automotive OEM in India and Thailand.

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Abstract

Synchronizing the production schedules and inbound movement of components to enable the Just-in-Time strategy while meeting the ambitious targets of reducing the logistics costs per unit sold is an ever-increasing challenge for automotive OEMs. OEMs are always on the lookout for ways to weed out inefficiencies in the logistics processes and gain more control of cost drivers. Various strategies have been deployed from having in-house logistics operations involving few carriers to outsourcing operations to 3PL and eventually 4PL to gain competitive advantage and cut costs but there is always a sense of more improvement within the logistics function.

In this article, we provide an overview of how an automotive OEM took up the challenge to build an efficient inbound logistics network for India and Thailand bringing visibility, faster access to information and bridging gaps between planning and execution seamlessly using transport planning and optimization.



Challenges

The inbound network for the automotive OEM is complex with myriad suppliers (400+) and intricate bills of materials (BOMs) leading to a huge number of parts (5000+) with varied dimensions and different packaging types. A lack of real-time collaboration among the multiple stakeholders, in-house teams, plant teams, carriers, and suppliers resulted in delays, different data points, and increased cycle times.

From a network perspective, there were challenges around the route planning with decision points around milk runs to x-docks, line hauls, direct shipments from suppliers, etc. These challenges were further compounded by the inefficiencies in transportation planning and lack of real-time visibility into the operations.

Lack of event visibility within the supply chain leads to delays in the completion of trips from a process perspective resulting in a delay of payments to the carriers.



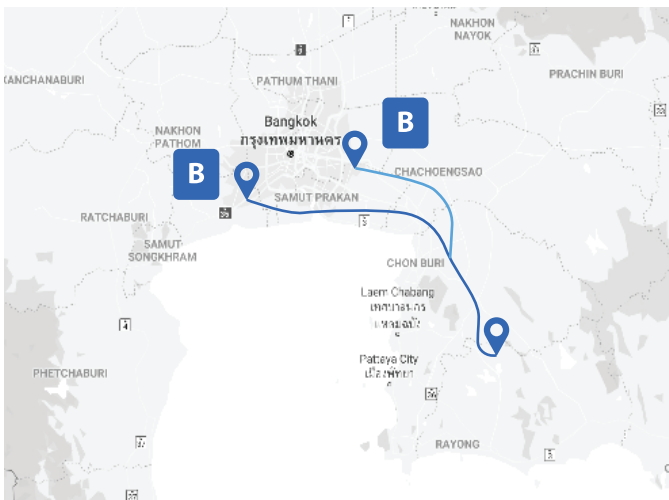
Opportunity

The holistic approach to optimizing the complete network presents an array of opportunities for cost savings. Multiple dimensions within the planning and execution space offer huge scope for improvements such as:

- **Transportation Planning**

Plan the optimal number of trips (trucks) required for given transportation demand and provide instant visibility to the carriers on the same enterprise platform, so that those carriers can plan their fleet effectively, leaving fewer chances of deviations.

- The planning tool will optimally allocate the carrier, truck (equipment type), and route structure to each trip while managing the consolidation effectively. The tool uncovered the hidden opportunities in the below examples.
 - ▶ For a linehaul lane, the client uses a different carrier (A) which has a higher rate by 10% than the carrier (B) which is also available for the same lane.
 - ▶ The client performed an analysis of the introduction of new parts from an existing supplier to determine the number of trips required to carry those parts to the plant. Without using the tool, the operations team found out that 61 trips will be required for the new parts. The same modeling was done in the tool with the same input which gave the result that it will require 57 trips against the 61 trips planned earlier. Each trip cost for that route from supplier to plant is USD 23.13. So, 4 trips will save USD 92.52. Even if these trips are done twice a week and for 50 weeks in the year. The total savings in a year will come out to USD 9253.



The below example shows 2 routes executed separately, as per the route structure maintained currently without using the tool. The optimizer provided the insight - a possibility to combine suppliers A and B on a single route since the distance between supplier A and supplier B is around 22 Km. This combination provides more

consolidation opportunities and improves the volume/weight utilization of the trucks.

• Optimal Load Building

In the automotive industry, we have identified that one cannot simply use weights or volumes to perform load planning. It requires a more sophisticated approach by considering multiple parts, different types of packaging having different dimensions, and packaging with different stacking requirements to build a feasible truck loading plan.

- Using 3d load building features, we incorporated several items packaging vehicle type constraints to build an effective loading plan. The below figure shows the top view of the loading in the truck.



SL2019.2



- The highlighted portion in the above figure shows 3 boxes stacked across the width of the truck. During our analysis, we found that for a certain material the box was 0.75 m in width, and considering the truck width as 2.3 m, 3 containers could be accommodated. Upon the investigation, the operations team responded that the size of the container is 0.8 m so it cannot be accommodated across the width. Upon further investigation, the operations team tried to accommodate 3 containers in the same type of truck and found that they could accommodate it because new trucks of the same type had a dimension of 2.43 m vs older trucks that measured 2.3 m. By applying the right analytical techniques to 3d load building, we were able to gain the insight to use a new truck type which was missing in the earlier planning. Hence, we managed to increase operational efficiency by 17%. This amounts to USD 1571/truck savings for the year.

- **Dock Scheduling**

A planner must consider various factors when building the dock schedule vehicle restrictions at docks, business hours at docks, part to dock associations, dock balancing depending on the number and timings of docks which makes it a complex activity to be handled manually. Traditional manual the approach leads to congestion at docks thereby affecting the production. The solution capture and set up all the constraints during automated dock scheduling during transportation planning itself which enables the smooth in-plant movement.



- OEM has outsourced the logistics operations to the carriers/ 3PLs causing a lack of transparency and control into the transportation operations leading to higher cost of operations. There is an ever-increasing need for an integrated and collaborative platform for connecting multiple stakeholders electronically and providing a single source of transportation information so that planning to execution is continuous. The tool can capture, and show real-time visibility into the truck location, ETA at the destination, in-plant vehicle movement, and reporting time at supplier locations and plants. Real time visibility provides an opportunity for the OEM to make the carriers comply in accordance with the business rules and report the events, for example, arrival at plant location as soon as they complete the event for the trip. This enables the completion of trips faster in the system and will ensure that the payment cycle is closed faster.

The above points show some examples of the potential small savings/ insights that the client has realized or is in the process of realizing within the short time frame. In addition to that, periodic simulation exercises using the platform, uncover improvement opportunities on a continuous and dynamic basis through multidimensional what-if analysis capability. This enables the client to tap low-hanging fruits justified by supporting data.



Conclusion

There is a strong case to reduce transportation costs and improve the key metrics such as the % cube utilization, logistics costs per unit sold, etc. using the end-to-end planning and execution platform. Achieving full dynamic optimization is the key milestone for the overall transformation journey.



About us

Incorporated in May of 2017, we at Smartlinks are constantly working in making logistics reliable through innovation and technology. With our strong consulting expertise in the transportation area across the globe, clubbed with our passion to explore and bring the latest technologies to the enterprise customers your logistics problems will surely have a solution with us, be a Partner today. www.smartlinkstech.com

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