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## **THE ROLE OF DATA ANALYTICS IN TRANSPORTATION AND LOGISTICS DECISION-MAKING**

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Logistics is one of several sectors and businesses that are being transformed by data analytics today. In fact, logistics is an excellent use case for data due to the complex and highly volatile nature of the industry and the intricate structure of the supply chain. To the benefit of logistics and transportation organizations, the valuable insights gained from transportation data analytics help industry players optimize routes, streamline production operations, and provide transparency across the entire supply chain.

The role of data analytics in transportation and logistics decision-making is becoming increasingly important in the modern world. Data analytics offers better visibility into global supply chain operations, helping logistics businesses identify new opportunities and optimize operational efficiency through data-driven solutions. In this way, companies can track and monitor the performance of their vehicles, optimize routes, and identify areas for improvement [1].

Efficient order processing in the warehouse. Data analytics can be used to identify bottlenecks in the supply chain and provide insights for operational improvements. Analytics can also be used to predict customer behavior, allowing logistics companies to customize their services to meet changing customer needs.

One of the main challenges faced by logistics organizations is to optimize operations sufficiently to maximize profits and minimize costs. Because delivery times must be considered to ensure that all products are transported within a given time frame, routing for last-mile delivery is particularly challenging [2].

By providing drivers with real-time information about traffic conditions and receiver availability, they have the ability to change their routes as needed. They can view in real time the optimal routes to travel, customers that make more sense to serve first, and expected delivery times for customers, all thanks to the in-vehicle data analytics available through advanced mobile technology.

Demand forecasting. The future belongs to metrics, KPIs, and forecasting. These components provide continuous performance monitoring and bottleneck detection based on real-time data. Managers have the necessary knowledge to take action as soon as this data reveals problem with picking speed, delays in the picking procedure, or when certain products are out of stock. In addition, spikes in demand for any product at any time at the right place and at the right price can be predicted using predictive

analytics. Knowing how customer demand will change makes it easier to plan and forecast for demand spikes, inventory shortages, and cost savings.

Business success depends on the optimal allocation of resources. To maintain efficient logistics operations, management must ensure that there are enough vehicles of the right size and capacity in addition to controlling employee shifts. In the past, managers relied heavily on historical data that was readily available or, worse, on their gut feelings based on previous experience. Today's customers are extremely demanding, so traditional business practices without the support of transportation data analytics and technology will only take companies so far [3].

Problems and challenges in implementing data analytics in logistics. This may include the lack of availability of quality data. Many companies face the problem of collecting and cleaning data for further analysis. Also consider cultural barriers. Implementing data analytics often requires a change in the internal culture of a company, which can be challenging. Insufficient staff qualifications, where companies may face a lack of specialists with sufficient expertise in data analytics. Problems with system integration. Integrating different systems and platforms for data collection and analysis can be difficult.

### **Conclusion**

Data analytics is revolutionizing the logistics industry by providing valuable insights that optimize operations and improve decision-making processes. As transportation and supply chain operations become increasingly complex, the role of data analytics becomes more critical in ensuring efficiency and competitiveness. By leveraging data analytics, logistics companies can enhance visibility, predict customer behavior, and optimize resources, ultimately leading to improved customer satisfaction and increased profitability.

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