# Transportation Mode Selection

Welcome to Unit 3 of AI for Logistics and Supply Chain, focusing on AI Strategy in Logistics Planning. In this presentation, we will explore the critical decision of transportation mode selection, its implications for logistics, and the role of AI in optimizing this process.

### Dr. Maharajan K



## **Recap: Al Strategy in Logistics Planning (Unit 3)**

#### **Previous Topics**

We explored key AI applications in logistics planning, including demand forecasting, inventory optimization, and warehouse automation.

#### **Unit 3 Focus**

This unit delves into the strategic aspect of transportation mode selection, a critical decision influencing supply chain efficiency and cost.

### **Guess the Topic - Images**



## **FRANSPORTAT MODES**

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### Introduction to Transportation Modes

#### Road

Trucks offer flexibility, door-todoor delivery, and are ideal for short to medium distances.

#### Rail

Trains are cost-effective for long distances, transporting heavy goods, and are less susceptible to weather conditions.

#### Air

Airplanes offer speed and efficiency for time-sensitive goods, but are generally more expensive than other modes.

#### Water

Ships are the most costeffective for large volumes over long distances, but are slower than other modes.

## **Factors Influencing Transportation Mode** Selection

Cost	Speed	Reliability	Сар
Transportation costs are a	Delivery time is crucial for	Consistency in delivery	The
major factor, considering	perishable goods or time-	schedules and on-time	good
fuel, labor, tolls, and	sensitive orders.	performance is essential	requ
insurance.		for customer satisfaction.	trans

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volume and weight of ds determine the ired capacity of the sportation mode.

### **Real Life Case: Retail Supply Chain Optimization**



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A large retailer faced stockouts and delayed deliveries due to inefficient transportation planning.

#### Solution

Implemented an AI-powered system to analyze historical data and optimize transportation mode selection based on factors like distance, time, and cost.

#### Outcome

Reduced stockouts by 20%, improved delivery times, and increased customer satisfaction.



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### Advantages and Disadvantages of Different Modes

Mode	Advantages	Disadvantages
Road	Flexibility, door-to-door delivery	Fuel costs, traffic co
Rail	Cost-effective for long distances, high capacity	Limited accessibility
Air	Speed, time-sensitive goods	Expensive, limited c
Water	Cost-effective for large volumes, global reach	Slowest mode, weat



Walking Learestcer thail ranpelyn setting alt apectig chards.

#### Advantage



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y, slower than road

cargo capacity

her-dependent

### **Student Activity: Mode Selection Decision Tree**





## **Summary and Key** Takeaways



#### **Key Factor**

Transportation mode selection is a crucial strategic decision influencing logistics efficiency, cost, and customer satisfaction. Al's Role

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Al-powered tools can analyze data and optimize mode selection based on various factors, leading to improved logistics outcomes.

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# References (Online and Books)

- The Logistics Handbook: A Guide to Supply Chain Management by Martin Christopher
- Al for Logistics and Supply Chain Management by Robert Monczka
- https://www.supplychaindigital.com/logistics/transportationmode-selection
- https://www.logisticsmgmt.com/article/the-role-of-ai-intransportation-mode-selection

