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.

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Recap: AI 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

Introduction to Transportation Modes

Road

Trucks offer flexibility, door-to-door 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 cost-effective for large volumes over long distances, but are slower than other modes.

Factors Influencing Transportation Mode Selection

Cost

Transportation costs are a major factor, considering fuel, labor, tolls, and insurance.

Speed

Delivery time is crucial for perishable goods or time-sensitive orders.

Reliability

Consistency in delivery schedules and on-time performance is essential for customer satisfaction.

Capacity

The volume and weight of goods determine the required capacity of the transportation mode.

Real Life Case: Retail Supply Chain Optimization

1

Challenge

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

2

Solution

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

3

Outcome

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

Advantages and Disadvantages of Different Modes

Mode	Advantages	Disadvantages
Road	Flexibility, door-to-door delivery	Fuel costs, traffic congestion
Rail	Cost-effective for long distances, high capacity	Limited accessibility, slower than road
Air	Speed, time-sensitive goods	Expensive, limited cargo capacity
Water	Cost-effective for large volumes, global reach	Slowest mode, weather-dependent

Student Activity: Mode Selection Decision Tree

1

Step 1

Identify the product type and its characteristics.

2

Step 2

Consider the delivery distance and time sensitivity.

3

Step 3

Analyze the cost, capacity, and reliability requirements.

4

Step 4

Choose the most suitable mode based on the evaluation.

Summary and Key Takeaways

1 **Key Factor**

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

2 **AI's Role**

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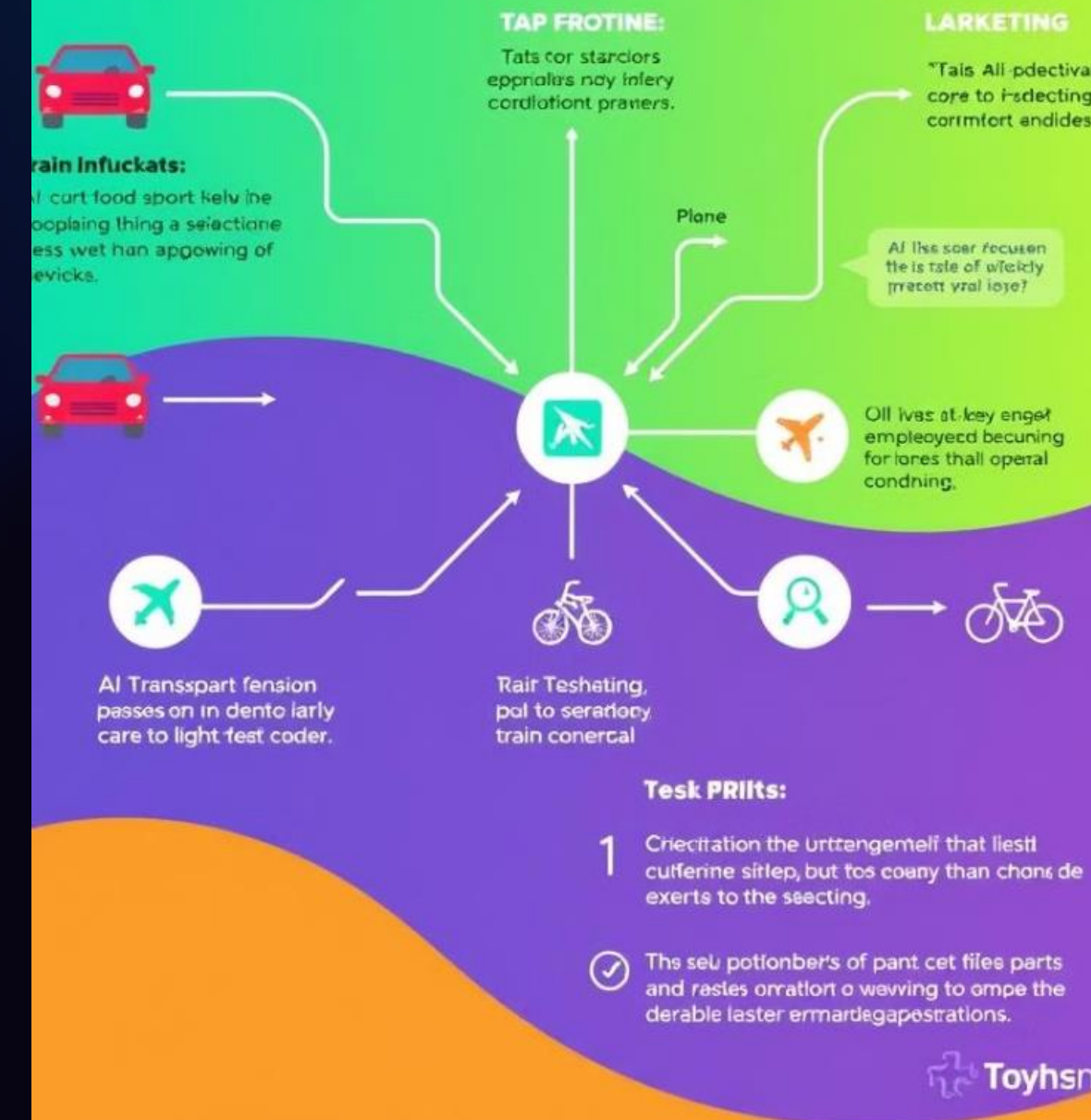
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