TITLE PAGE

- **Problem Statement Title- SmartLogix: AI-Powered Supply Chain Automation**
- **Domain - AI**
- **Team Name- BRAINROT**

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AI-Powered Supply Chain Automation

❖ Proposed Problem.

- Logistics is a domain with significant challenges like demand forecasting, route optimization, and cost management. These inefficiencies lead to postponed deliveries, low resource utilization, and customer dissatisfaction.

- Solutions for optimizing SC performance, boosting operational efficiency, and ensuring service delivery are a must to meet this challenge.

- This issue becomes all the more critical because logistics is the cornerstone of global supply chains, the essential processes that enable goods to flow seamlessly from producers to final consumers.

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IDEA TITLE

❖Proposed Solution

- SmartLogix is an intelligent solution that helps automate and improve supply chain operations, making logistics more efficient.
- The system uses machine learning models like TensorFlowand scikit-learn to predict demand, optimize routes, and provide real-time data
- The smart rerouting feature quickly adjusts delivery routes, making it easy for retailers and distributors to ensure fast deliveries with little effort.
- It analyzes recent data to recommend the right products for retailers based on community demand and distributor needs.
- Unlike other systems, SmartLogix uses advanced algorithms for better predictions, automation, and real-time changes, making it more efficient and user-friendly for both retailers and distributors.

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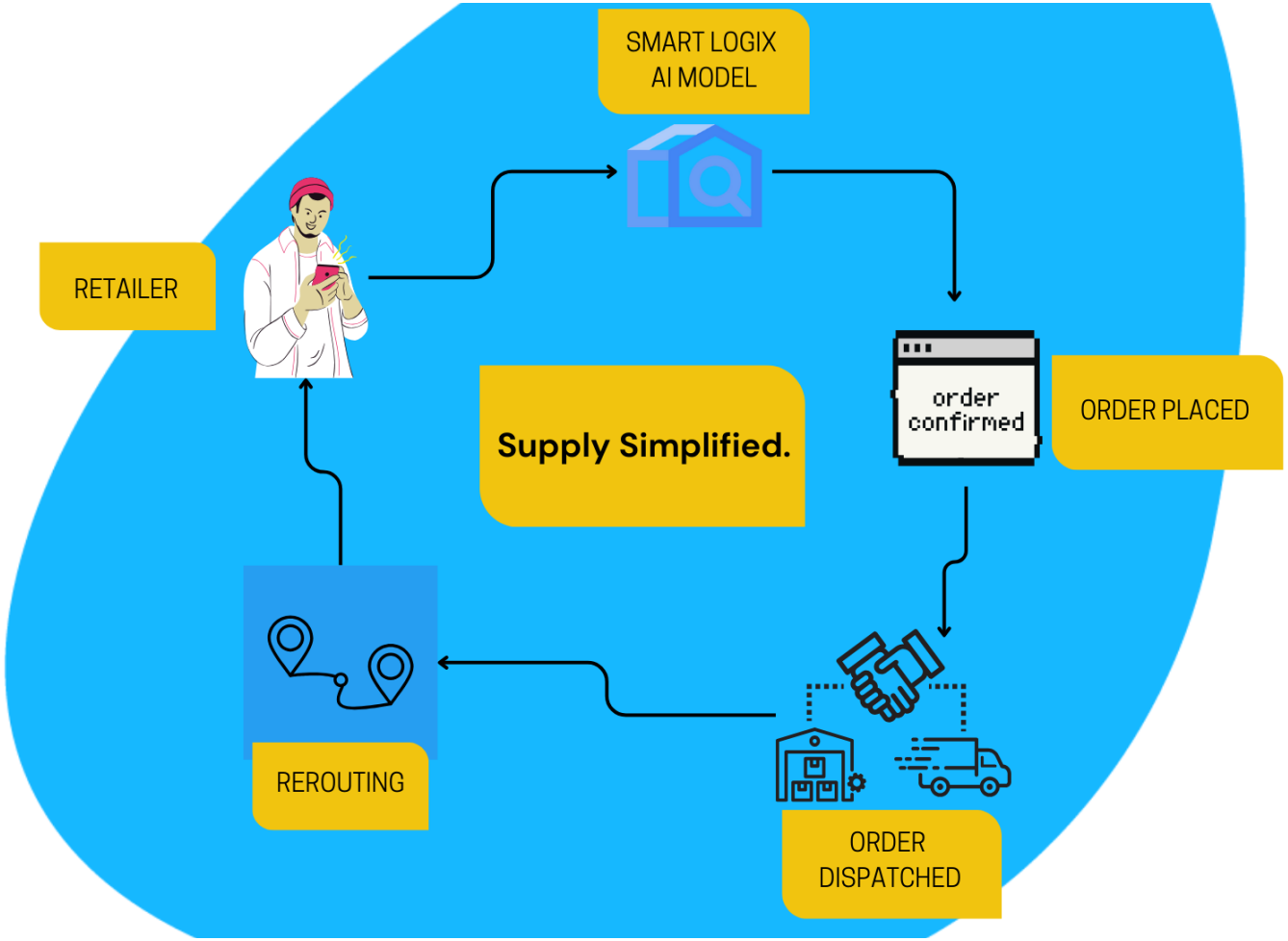
TECHNICAL APPROACH

- **Frontend**: HTML, React.js with Material-UI or Tailwind CSS.
- **Backend**: Node.js with Express or Python Django, flask.
- **Database**: MySQL + Xampp for hybrid use.
- **AI Models**: TensorFlow/PyTorch for custom models; scikit-learn for traditional ML.
- **Hosting**: AWS EC2 or Heroku for scalability.
- **APIs**: OpenWeatherMap (for weather insights), Google Maps (for traffic data).



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FEASIBILITY AND VIABILITY

Scalability & Integration: The system can grow to handle supply chains of any size and works well with existing systems, causing little disruption and allowing quick use.

Reliability & Security: Strong checks make sure the data is accurate, and advanced security measures keep the system safe from risks, making it reliable and secure.

Cost Efficiency Over Time: While the start-up cost is high, running costs drop quickly, saving a lot of money and increasing profits over time.

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IMPACT AND BENEFITS

❖ IMPACT

The solution significantly enhances supply chain efficiency for businesses by reducing costs, improving delivery times, and ensuring better inventory management. Customers benefit from timely deliveries and improved service quality, increasing satisfaction and loyalty. It empowers businesses with real-time insights, enabling smarter, data-driven decisions.

❖ BENEFITS

Economic: The solution will reduce the operating costs by automating routine tasks, smooth processes in the supply chain, and optimize stock management. This leads to better use of resources and overall cost efficiency.

Social: This has improved customer satisfaction through real-time data offerings, and accurate forecasts, thereby realizing faster and reliable deliveries, which are important for a better customer experience.

Environmental: The system’s route optimization feature reduces unnecessary transportation, leading to lower fuel consumption. Optimized supply chain operations help decrease carbon emissions, aligning with sustainability objectives."

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RESEARCH AND REFERENCES

Artificial Intelligence in Smart Logistics Cyber-Physical Systems: State-of-The-Arts and Potential Applications

Yang Liu, Xin Tao, Xin Li, *Fellow, IEEE*, Armando Walter Colombo, *Fellow, IEEE*, and Shiyan Hu, *Senior Member, IEEE*

(Review Paper)

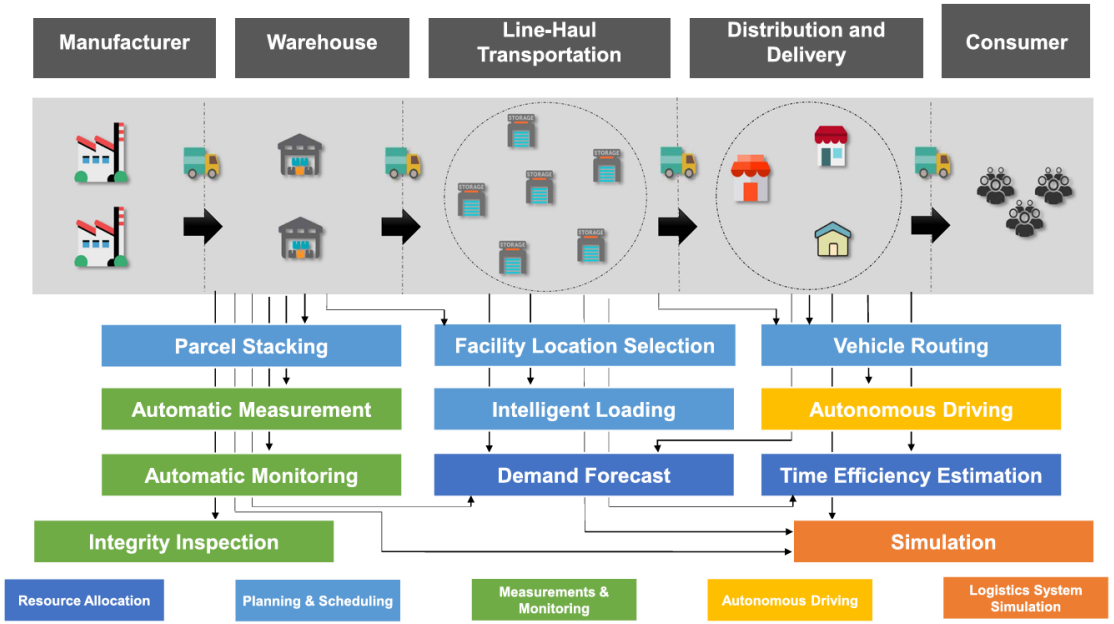
Reference link 1 - Click on this

Reference link 2 - click on this

ORACLE
Logistics Cloud

Oracle Logistics Network Modeling Cloud

Stay ahead of the game with Oracle Logistics Network Modeling Cloud, a solution that enables organizations to design and operate efficient and agile logistics networks. Whether you are attempting to determine the impact of routing options, quantifying potential savings by adjusting shipping and receiving hours at the warehouse, or analyzing the impact of rate increases on your budget, Oracle Logistics Network Modeling Cloud provides an intuitive approach to performing detailed what-if scenario analysis within the context of your operational environment, offering a richer and more accurate set of results that lead to improved outcomes.



	Time Efficiency	Cost	Safety	Cyber-Security
Warehousing	Demand Forecast inventory optimization Simulation Automatic Measurement Automatic Monitoring	Facility Location Selection Simulation Parcel Stacking	Automatic Monitoring Simulation	Integrity Inspection
Line-Hual Transportation	Demand Forecast Time Efficiency Estimation Simulation Automatic Measurement Vehicle Routing	Vehicle Routing Autonomous Driving Simulation Intelligent Loading	Automatic Monitoring Simulation	-
Distribution	Demand Forecast Time Efficiency Estimation Simulation	Facility Location Selection Simulation	Automatic Monitoring Simulation	-
Delivery	Time Efficiency Estimation Vehicle Routing Simulation Demand Forecast	Vehicle Routing Intelligent Loading Simulation Autonomous Driving	Simulation	-

The intersections of component and challenge not yet covered by existing literature are filled using the symbol "-".