AI and ML Based Solution for an International Paints and Coatings Company

- **A Case Study**

Client

- A leading paints and coatings company headquartered in Mumbai, India.
- Manufacturing operations are spread across 6+ cities.
- Over 1500 SKUs in categories such as decorative and industrial paints and coatings.
- Widespread network of 10,000 dealers and retailers.

Problem

Our client was looking to improve their operations by leveraging our solutions. Here are some of the challenges faced by the business:

- Inability to determine and predict the demand for their products as per the SKUs and location.
- The business model worked on the trade credit system between the company and the dealers across the countries. This meant that the client had to identify the dealers that can be trusted and provide a working model with a minimum probability of default.
- Having multiple manufacturing units in various regions increased the need to manage and forecast stock levels efficiently. The manual method was time-consuming and involved a huge chunk of the client's resources.
- Lack of a system to monitor the performance of the machines in the manufacturing units in real-time and prevent breakdowns.

Solution

To address the challenges faced by our client we proposed a predictive analytics backed data analytics solution. Here are some of the key components of our solution:

❖ **Demand Forecasting**

- We collected historical data from multiple sources such as the client's ERP system, and external sources such as economic indicators, raw material price fluctuations, etc., to build a demand forecasting model.
- The data was collected for each SKU at the regional level and trained the model.
- We developed an ML-based inventory optimization system using the data from client's manufacturing units, warehouses, and distribution centers to predict future demands and optimize stock levels. This enabled the client to automatically adjust production and inventory levels.
- This model was then integrated with the client's existing system.

❖ **Dealer Selection**

- We developed a scoring system based on various parameters such as payment history, creditworthiness, and market potential to assess the dealers.
- The data on the client's dealers were collected from various sources such as ERP and other public data sources.
- The system used a logistic regression model to score the dealers and identify the most trustworthy ones to reduce the overall default.
- To enable the client to focus their sales efforts on the most promising dealers, the dealer scoring system was integrated with the CRM.

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❖ **Predictive Maintenance**

- A machine learning-based system was developed to monitor the performance of client's machines and predict potential breakdowns.
- Data on the client's machines such as vibration data, temperature data, and other sensors were collected.
- Using ML algorithms the system was enabled to predict equipment failures and generate alerts when a potential breakdown was identified.

Business Impact

Our solutions helped the client achieve several outcomes, including:

- Reduced stockouts by 17% and excess inventory by 22%.
- Increased sales revenue by 8% by the end of the quarter by ensuring that the right products were available at the right time and at the right quantities, and focusing on the most promising dealers.
- Improved inventory turnover ratio by 12% by optimizing stock levels.
- Improved overall equipment effectiveness by 7% and reduced unplanned downtime by one-third as compared to the previous FY.