Industry	Chemical & Fuel Technology
Use Case Title	Predictive Analytics for Production and Operations Management
About the Customer	The Client is a Global chemical & fuel technology company specializing in plastics, chemicals, and refining. We worked with on this project as a partner with a local IT company
Business Problem	The Client was looking for a solution to predict certain key parameters to enhance their production and operations management. The extensive dataset provided by Oxford Economics serves as a valuable resource for generating insights and informing decision-making processes. However, handling such a vast amount of data and extracting meaningful predictions was presenting a significant challenge.
Solution	To address the business problem, the following solution approach was implemented: **Stats** ▪ 10 + Databank with 1980 to 2050 yearly data ▪ 250 + Indicator's name **Deployment** ▪ Azure cloud servers. **Approach** ▪ Utilizing Azure Data Factory, data from Oxford Economics was pulled into an Azure Data Lake Storage (ADLS) repository. ▪ Azure Databricks was used for data transformation, cleansing, and preparation processes to ensure data quality and usability. ▪ The prepared data was loaded into Azure SQL Database, providing a scalable and reliable storage solution for further processing and analysis. ▪ The predictions were integrated into a Power BI report, leveraging Azure Power BI service, which offers an interactive and visually appealing interface for data exploration and visualization. **Implementation** ▪ The implementation involved setting up the data pipeline using Azure Data Factory to retrieve, store, and process data from Oxford Economics. ▪ Azure Databricks facilitated the data transformation and preparation processes, ensuring efficient data processing at scale. ▪ Azure Machine Learning provided the necessary tools and infrastructure for developing and training the predictive model. ▪ The performance of the model was evaluated using relevant evaluation metrics to ensure its accuracy and reliability. ▪ The predictions were seamlessly integrated into a Power BI report, hosted on Azure Power BI service, enabling stakeholders to access and interact with the predictions easily.
Outcome	▪ The Client now has the capability to predict key parameters crucial for production and operations management. Predicting

	key parameters allowed the Client to proactively address potential challenges, minimize disruptions, and optimize resource utilization.
- The predictive insights obtained from the model assist in making informed decisions regarding resource allocation, demand forecasting, and operational planning. The availability of accurate and timely predictions enabled the Client to make data-driven decisions, leading to improved performance and competitiveness.
- The Power BI report, hosted on Azure Power BI service, offers a user-friendly interface for stakeholders to access and interact with the predictions, enabling better visibility and understanding of future trends
- Long-term forecasts based on historical trends provided the Client with valuable insights for strategic planning and risk management.