

Assignment-11

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- **How AI Tackles Retail Demand Forecasting Challenges:**

- **Handling Complex and Non-Linear Patterns:**

- AI algorithms can analyze huge volumes of sales data, seasonality, promotional impact, weather, and external factors to detect hidden trends and patterns that traditional models might miss. This enables more adaptive and precise forecasting across different product lines and store locations.

- **Real-Time Forecast Adjustments:**

- AI models can dynamically update forecasts in real-time as new data flows in (e.g., changes in consumer behavior, stock levels, or competitor actions). This allows businesses to respond proactively to sudden changes in demand rather than relying on outdated predictions.

- **Dealing with Data Gaps and Noise:**

- AI models like deep learning and ensemble techniques can fill in missing data and filter out noise more effectively than rule-based systems, making predictions more resilient and consistent.

- **Granular Forecasting Across Channels and Locations:**

- AI allows for highly detailed demand forecasting at the SKU level, tailored by region, store, or even channel (in-store, online, app). This level of precision supports better inventory distribution and customer satisfaction.

- **Incorporating External Influences and Social Signals:**

- AI can integrate data from social media trends, online reviews, news sentiment, and competitor activity to forecast demand more holistically. This helps anticipate sudden spikes or drops in interest due

to viral trends, seasonal buzz, or global events (e.g., a product going viral on TikTok).

- **Benefits of Accurate AI-Powered Demand Forecasting in Retail:**

- **Optimized Inventory Management:**

- Retailers can reduce overstocking and understocking issues, leading to lower carrying costs, fewer stockouts, and better shelf availability.

- **Reduced Waste and Markdown Costs:**

- Especially for perishable goods, accurate demand predictions help in aligning procurement with actual sales, reducing spoilage and the need for discounts.

- **Enhanced Customer Satisfaction:**

- With the right products available at the right time and location, customer service improves, leading to higher loyalty and repeat purchases.

- **Increased Profitability and Efficiency:**

- Better alignment of supply and demand improves cash flow, optimizes supply chain operations, and allows retailers to invest resources in high-demand products.

- **Smarter Promotional Planning and Marketing:**

- AI-driven forecasts help retailers plan promotions based on predicted customer behavior, avoiding unnecessary discounts and ensuring campaigns are launched when they're most effective. This improves ROI on marketing spend and enhances campaign effectiveness.