

Capstone Project Weekly Report

Date: 14 Sep 2025

Project Details:

1. Sponsor Company: AiSPRY
2. Project Title: Inventory Optimization Replenishment Simulation for Hospital Pharmacy

Note: All the fields in the form are required.

Project Milestones:

Progress made in Current Week:

1. Completed EDA:

- Completed EDA with revised margin percentages and removed negative margins.
- Finalized anomaly handling and dataset cleaning.
- Summarized key findings to support forecasting model inputs.

2. Initial Model Development:

- Built a baseline forecasting model to test feasibility.
- Validated on sample SKUs to confirm accuracy and approach suitability.

3. KPI Finalization

- Finalized the KPI framework across three categories – Operational Stability, Patient & Process Recovery, and Strategic Optimization.
- Operational KPIs include metrics like Vendor Fill Rate, On-time Delivery Rate, and Department-level Cost Contribution to track efficiency and stability.
- Patient & Process KPIs include measures such as Overall Bounce Rate, Stock-out Frequency & Duration, Substitution Rate, and Revenue Loss due to Bounce, capturing service reliability and patient impact.
- Strategic KPIs cover Forecast Accuracy, Lead Time Variance, Stock Holding Cost, Service Level, and Critical SKU Coverage, supporting long-term optimization and forecasting.
- Shared detailed KPI definitions and formulas with the team for alignment on dashboard design and measurement approach.

Tasks to finish in Next week:

- **Model Implementation and Testing**

- Implement the forecasting model on the cleaned dataset.
- Conduct detailed testing and refine based on performance.

- **Initial Architecture Setup:**

- Begin setting up the technical architecture for data pipelines and dashboard integration.
- Ensure smooth flow between data, model, and reporting layers.

Updates/MoM from Sponsor and Faculty Mentor:

Note: It is expected that you have at least one weekly connect with the faculty mentor and sponsor. If you were not able to schedule meetings with the sponsor or faculty mentor in the current week, please mention the reason for your inability to meet with the Sponsor or Faculty Mentor.

Updates/MoM from Sponsor:

Key Points

- Finalized the KPI framework across Operational Stability, Patient & Process Recovery, and Strategic Optimization.
- Covered efficiency metrics (e.g., Transfer Success, Vendor Fill Rate), patient-impact measures (e.g., Bounce Rate, Stock-out Frequency), and long-term optimization indicators (e.g., Forecast Accuracy, Service Level).
- Shared definitions and formulas with the team to ensure alignment for dashboard development..

Sponsor feedback on EDA:

- Incorporated sponsor's recommendation to remove negative margins.
- Replaced negative values with a margin adjustment between +1% and +18% to maintain realistic profitability levels.
- Converted the revised margin into unit cost per SKU, ensuring consistency for model inputs and analysis.
- Finalized anomaly handling and dataset cleaning.

Updates/MoM from Faculty Mentor:

Same as above – Meeting conducted jointly

Challenges:

Mention any technical and non-technical challenges that you faced during the current week that hindered your project progress. Enter "NA" if you didn't face any challenges.

Technical Challenges:

NA

Non-Technical Challenges:

NA

Mention any other queries/challenges regarding the project that you want to highlight:

NA