

Capstone Project Weekly Report

Date: 17 Aug 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. Finalization of Overall Goals after Use Case Analysis:

- Conducted a detailed analysis of the six use cases related to pharmacy and aligned on the overarching direction for the project.
- Based on this assessment, the team finalized the overall goals as:
 - **Inventory optimization:** Develop a forecast model to predict optimal stock levels (pharmacy point of view).
 - **Dashboard development:** Add key KPIs including store-level inventory, consumption, sales, predicted quantity, expiry, and bounce rate.
- **Assumption finalized:** Hospitals have automation in place but currently lack an AI-driven model for forecasting and decision support.

2. Division of Focus Areas:

To streamline execution, each team member has taken ownership of one KPI:

- Anmol – Store-level inventory
- Divam – Consumption and expiry
- Rahul – Predicted quantity
- Ishika – Bounce rate
- Janki – Sales

3. Supporting Work Completed

- Drafted metadata structure and generated synthetic sample records in line with the finalized goals.
- Documented workflows, challenges, and solution approaches for each use case, consolidating them into a common framework for dashboard and model development.

Tasks to finish in Next week:

• **Synthetic Data Preparation**

- Refine the metadata headers by adding realistic fields.
- Generate a comprehensive synthetic dataset based on finalized headers.
- Ensure data realism by incorporating demand variability, expiry, and bounce-related scenario.

• **Exploratory Data Analysis (EDA)**

- Perform EDA on the synthetic dataset to check coverage of all required aspects.
- Validate whether the generated data supports the identified KPIs (store inventory, consumption, sales, expiry, predicted quantity, bounce rate).
- Identify gaps or noise in data and refine generation process accordingly.

• **Business Problem & Approach Documentation**

- Share updated metadata and synthetic dataset with sponsor for review.
- Incorporate sponsor feedback into the next iteration of the dataset.
- Align on deliverables for the upcoming 20-day plan, considering mid-review presentation requirements.

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.

Key Points

Sponsor Feedback on Use Case Analysis

- The team's approach of analyzing each use case individually was appreciated.
- Sponsor emphasized creating clear **assumptions** to simplify complex challenges (e.g., assume automation exists but without AI, so focus on AI-driven forecasting rather than software engineering).
- Suggested to remove challenges that become irrelevant under the chosen assumption.

Direction on Project Focus

- Sponsor recommended finalizing **Assumption:** Hospitals already have automation but lack AI models.
- This allows the project to focus on **AI/ML-based forecasting and optimization**, rather than basic process automation.
- Highlighted that this aligns better with time constraints (3 months) and industry needs.

Synthetic Data Preparation Guidance

- Advised to spend the current week brainstorming and preparing **synthetic data** aligned to KPIs.
- Suggested **reverse-engineering synthetic data**:
 - Start from the KPI (e.g., store-level inventory, consumption, bounce rate).
 - Identify required entities, relationships, and attributes.
 - Then generate synthetic data accordingly.
- Sponsor will provide anonymized headers next week to validate alignment.

Additional Insights

- Mentioned real hospital ERPs differ widely; hence, stick to assumption that **AI will be layered on top of existing automation**.
- Suggested considering practical pharmacy scenarios like:
 - In-patient vs out-patient consumption.
 - Consumables mapping (wards, ICU, OPD).
 - Stock-outs and bounce rate tracking across branches.

Next Steps Agreed

- Team to **finalize metadata and synthetic dataset** for all five KPIs by weekend.
- Sponsor will review dataset structure and provide feedback in the next weekly connect.
- Next sponsor call will review **progress on synthetic data and draft dashboards**.

Updates/MoM from Sponsor:

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