Capstone Project Weekly Report

Date: 10 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:

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1. Use Case Exploration

- Conducted a comprehensive review to define and refine the pharmacy inventory use cases—focusing on how inventory optimization can directly influence patient bounce, stockouts, and service continuity.

2. Problem Statement Identified

- Formulated the core problem statements and explored the different use cases shared by Praveen from AiSPRY

3. Expanded Domain Knowledge in Pharma

- Surveyed multiple domain-specific sources to deepen understanding:

  - Inventory management frameworks in hospital pharmacies, including ABC/VED drug categorization and material control [Academia](#).

  - Research on predictive techniques to minimize bounce rate, optimize drug availability, and enhance patient satisfaction [IRJET](#).

  - Case studies on inventory performance metrics in healthcare, highlighting critical gaps and control inefficiencies [PMC](#).

  - Simulation-optimization approaches (e.g., Arena OptQuest) demonstrating sizeable reductions in inventory cost and volume without compromising service levels [MDPI](#).

Tasks to finish in Next week:

- **Use Case Deep-Dive & Selection**

  - Explore all six identified use cases in detail.
  - Evaluate feasibility, impact, and alignment with project goals.
  - Finalize the specific problem statements that will be addressed in this project.

- **Approach Definition**

  - Develop a structured approach for each selected problem statement.
  - Outline methodology, required data, analytical techniques, and expected outcomes.

- **Business Problem & Approach Documentation**

  - Prepare a consolidated document listing:
    - The finalized business problems.
    - Corresponding proposed approaches for each

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

Business First Approach

- Must understand hospital pharmacy domain and terminology before data analysis
- Focus on business problems, not immediate data exploration

Hospital Context

- Large hospitals manage ~5,000 SKUs across pharmacy, consumables, and housekeeping
- Multiple specialized pharmacies per hospital (ICU, inpatient, outpatient)
- ERP systems track all operations from patients to inventory

Data Overview

- Synthetic data available within 1.5 months

Project Scope

- Excluded: Distribution, fake drug verification
- Included: Expiry management, manufacturer tracking
- Approach: Start with 1,000 records, analyze prescription and vendor sides
- Clustering: Fast/slow moving inventory, seasonal patterns

Team Deliverables

- Document and analyse 6 use cases by Wednesday
- Provide weekly time commitment estimates
- Leverage existing pharma background

Action Items

Team: Each member will take one use case and prepare detailed analysis including:

- Problem statement
- Solution approach
- Proposed methodology Establish team coordination process

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:

- Domain Knowledge- To address this we are working on gathering the knowledge by exploring material available online

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

NA