

Capstone Project Weekly Report

Date: 21 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. **Architecture Setup**

- Completed end-to-end architecture design and setup for data ingestion, processing, model integration, and dashboard flow.
- Ensures a scalable and modular foundation for upcoming development and deployment.

2. **Dashboard Wireframe (Initial Version)**

- Designed the initial wireframe for the dashboard covering finalized KPIs (availability, demand vs supply, vendor performance, margins, etc.).
- Provides a clear view of layout, navigation, and data presentation structure.
- This will serve as the base for iterative improvements once model outputs are integrated.

3. **Initial Forecasting Model**

- Developed a baseline forecasting model to test feasibility of predictions.
- Model currently under **validation** to check accuracy, feature relevance, and business alignment.
- Output will guide refinement of features and selection of final modelling approach.

Tasks to finish in Next week:

1. **Model Validation & Refinement**

- Complete validation of the initial model.
- Refine parameters/features based on performance and align with business requirements.

2. **Integration with Dashboard**

- Connect model outputs to the dashboard wireframe.
- Showcase key insights (SKU demand, margins, vendor reliability) through visualizations.

3. **Architecture Development (Next Phase)**

- Extend setup to include automated data flows (real-time/near real-time ingestion).
- Ensure compatibility between backend pipelines and dashboard layer.

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.

Meeting 1 Wednesday 17 September 2025:

Key Updates

- Architecture: Data pipeline and Superset dashboard setup; initial version due this week.
- Model: Baseline forecasting model built (tested on ~100 SKUs), but accuracy low; facing RAM issues. Parameter tuning and hybrid approach in progress.
- Dashboard: KPIs finalized with sponsor; wireframe under development, first version targeted this weekend.
- Data: Previous issues fixed; no current blockers.

Decisions

- Forecasting model improvement is the top priority.
- Code and MOM to be shared with Praveen; further discussion in Sunday's connect.

Next Steps

- Deliver initial pipeline, dashboard wireframe, and baseline model by weekend.
- Refine forecasting models and resolve performance issues.
- Prepare for sponsor discussion on Sunday.

Meeting 2: Sunday 21 September 2025

Updates

- Model: Multiple forecasting techniques tested; RMSE/ME values reasonable but MAPE shows errors (>100%) → formula issue to be fixed.
- Architecture: Set up with Docker, Postgres, Airflow, DBT, Python, Superset. Sample dashboard created; orchestration jobs pending.

Decisions

- Recheck MAPE calculation.
- Architecture mostly complete; focus to shift to models.

Next Steps

- Fix MAPE and validate results.
- Tune model parameters for accuracy.
- Finalize orchestration job & dashboard, then share with sponsor.

Updates/MoM from Sponsor:

Updates/MoM from Faculty Mentor:

Same as MoM with Sponsor. Had a common meeting with Professor and Sponsor

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