

Demand Forecast Model Development Plan (CRISP-DM Framework)

1. Business Understanding

In this initial phase, we will focus on clearly defining the business objectives and aligning them with the data science goals. This includes:

- Identifying key stakeholders
- Determining model scope and required granularity
- Defining relevant input variables, business trends, and edge cases

Deliverables:

- Project Charter
- Stakeholder Map
- Finalized Success Criteria

2. Data Understanding

This phase involves a comprehensive evaluation of the available data sources and an in-depth Exploratory Data Analysis (EDA). It will include a series of workshops and collaborative sessions with domain experts to:

- Uncover data patterns
- Validate data quality
- Guide feature selection and preliminary model design

Deliverables:

- Data Dictionary (DD)
- Technical Design Document (TDD)
- Business Requirements Document (BRD)
- Test Document (TD)

3. Data Preparation

Here, we will implement the feature engineering process as per the specifications outlined in the TDD and TD. This will ensure the dataset is optimized for modeling and aligned with project requirements.

Deliverable:

- A forward-tested, production-ready Feature Store

4. Modeling

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In this phase, multiple modeling approaches will be evaluated to identify the most suitable forecasting solution. Based on the finalized feature set and available external trends data, model types may include:

- Ensemble methods (e.g., XGBoost, ElasticNet)
- Stacked decision tree regressors
- Advanced architectures such as Financial Transformers (FiT)

The best-performing model will be tuned and validated against the project's success metrics.

Deliverable:

- Tuned Forecasting Model

5. Evaluation

The selected model will undergo rigorous testing against business objectives and the criteria set forth in the Test Document. Key metrics will include:

- Accuracy
- Stability
- Business applicability

Deliverable:

- Model Sign-Off Sheet approved by all stakeholders

6. Deployment

This final phase involves:

- Integrating the model into business operations
- Executing a full deployment and Go-Live event
- Establishing a maintenance strategy defined by the Service Level Agreement (SLA)

Deliverables:

- Deployment Plan
- Go-Live Event
- Project Sign-Off Document