

Walmart Sales Analysis For Retail Industry With Machine Learning

Milestone 1: Project Initialization and Planning Phase

The "Project Initialization and Planning Phase" marks the project's outset, defining goals, scope, and stakeholders. This crucial phase establishes project parameters, identifies key team members, allocates resources, and outlines a realistic timeline. It also involves risk assessment and mitigation planning. Successful initiation sets the foundation for a well-organized and efficiently executed machine learning project, ensuring clarity, alignment, and proactive measures for potential challenges.

Activity 1: Define Problem Statement

Problem Statement: The current sales forecasting process in the retail industry, particularly at Walmart, faces significant challenges, impacting decision-making and operational efficiency. Retailers, including Walmart, encounter difficulties in accurately predicting sales due to various factors such as holidays, seasonal trends, and promotional events. These challenges result in suboptimal inventory management, staffing issues, and missed sales opportunities, potentially affecting overall customer satisfaction and profitability. To enhance our forecasting accuracy and improve operational efficiency, we aim to address these pain points. By understanding the specific factors affecting sales and implementing advanced predictive models, we can create a robust, user-friendly forecasting solution that aligns with Walmart's operational needs and fosters improved business performance. I am Retail facing sales issues I'm trying to Accurately predict sales But Numerous factors affect sales unpredictably Because Including holidays,seasonal trends,and promotions .

Walmart Sales Analysis Problem Statement Report: [Click sHere](#)

Activity 2: Project Proposal (Proposed Solution)

The proposal report aims to enhance sales forecasting for Walmart using machine learning, boosting efficiency and accuracy. It tackles system inefficiencies, promising better operations, improved demand forecasting, and optimized inventory management. Key features in

Walmart Sales Analysis Project Proposal Report: [Click Here](#)

Activity 3: Initial Project Planning

Initial Project Planning involves outlining key objectives, defining scope, and identifying sales on holidays,week days . It encompasses setting timelines, allocating resources, and determining the overall project strategy. During this phase, the team establishes a clear understanding of the dataset, formulates goals for analysis, and plans the workflow for data processing. Effective

initial planning lays the foundation for a systematic and well-executed project, ensuring successful outcomes.

Walmart Sales Analysis Project Planning Report: [Click Here](#)

Milestone 2: Data Collection and Preprocessing Phase

The Data Collection and Preprocessing Phase involves executing a plan to gather relevant sales data from Kaggle, ensuring data quality through verification and addressing missing values. Preprocessing tasks include cleaning, encoding, and organizing the dataset for subsequent exploratory analysis and machine learning model development.

Activity 1: Data Collection Plan, Raw Data Sources Identified, Data Quality Report

The dataset for "Walmart Sales Analysis For Retail Industry" is sourced from Kaggle. It includes applicant sales data. Data quality is ensured through thorough verification, addressing missing values, and maintaining adherence to ethical guidelines, establishing a reliable foundation for predictive modeling.

Walmart Sales Analysis Data Collection Report: [Click Here](#)

Activity 2: Data Quality Report

The dataset for "Walmart Sales Analysis For Retail Industry" is sourced from Kaggle. It includes sales data. Data quality is ensured through thorough verification, addressing missing values, and maintaining adherence to ethical guidelines, establishing a reliable foundation for predictive modeling.

Walmart Sales Analysis Data Quality Report: [Click Here](#)

Activity 3: Data Exploration and Preprocessing

Data Exploration involves analyzing the sales dataset to understand patterns, distributions, and outliers. Preprocessing includes handling missing values, scaling, and encoding categorical variables. These crucial steps enhance data quality, ensuring the reliability and effectiveness of subsequent analyses in the loan approval project.

Walmart Sales Analysis Data Exploration and Preprocessing Report: [Click Here](#)

Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model for analysis. It encompasses strategic feature selection, evaluating and selecting models (Random Forest, Decision Tree,) initiating training with code, and rigorously validating and assessing model performance for informed decision-making in the lending process.

Activity 1: Feature Selection Report

The Feature Selection Report outlines the rationale behind choosing specific features (e.g., type, store, IsHoliday, Weekly_Sales) for the sales analysis. It evaluates relevance, importance, and impact on predictive accuracy, ensuring the inclusion of key factors influencing the model's ability to discern credible loan applicants.

Walamrt Sales Analysis Feature Selection Report: [Click Here](#)

Activity 2: Model Selection Report

The Model Selection Report details the rationale behind choosing Random Forest, Decision Tree, Xgboost and ARIMA models for sales analysis. It considers each model's strengths in handling complex relationships, interpretability, adaptability, and overall predictive performance, ensuring an informed choice aligned with project objectives.

Walmart Sales Analysis Model Selection Report: [Click Here](#)

Activity 3: Initial Model Training Code, Model Validation and Evaluation Report

The Initial Model Training Code employs selected algorithms on the Walmart sales dataset, setting the foundation for predictive modeling. The subsequent Model Validation and Evaluation Report rigorously assesses model performance, employing metrics like accuracy and precision to ensure reliability and effectiveness in predicting loan outcomes.

Walmart Sales Analysis Model Development Phase Template: [Click Here](#)

Milestone 4: Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

Activity 1: Hyperparameter Tuning Documentation

The Random Forest model was selected for its superior performance, exhibiting high accuracy during hyperparameter tuning. Its ability to handle complex relationships, minimize overfitting,

and optimize predictive accuracy aligns with project objectives, justifying its selection as the final model.

Activity 2: Performance Metrics Comparison Report

The Performance Metrics Comparison Report contrasts the baseline and optimized metrics for various models, specifically highlighting the enhanced performance of the random forest model. This assessment provides a clear understanding of the refined predictive capabilities achieved through hyperparameter tuning.

Activity 3: Final Model Selection Justification

The Final Model Selection Justification articulates the rationale for choosing Random Forest as the ultimate model. Its exceptional accuracy, ability to handle complexity, and successful hyperparameter tuning align with project objectives, ensuring optimal loan approval predictions.

Walmart Sales Analysis Model Optimization and Tuning Phase Report: [Click Here](#)

Milestone 5: Project Files Submission and Documentation

For project file submission in Github, Kindly click the link and refer to the flow. [Click Here](#)

For the documentation, Kindly refer to the link. [Click sHeres](#)

Milestone 6: Project Demonstration

In the upcoming module called Project Demonstration, individuals will be required to record a video by sharing their screens. They will need to explain their project and demonstrate its execution during the presentation.