Project Initialization and Planning Phase

Date	8th July 2024
Team ID	SWTID1720435231
Project Title	Walmart Sales Analysis For Retail Industry With Machine Learning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) report

This proposal aims to use machine learning to improve how Walmart and other retailers manage sales and make decisions. By analyzing past sales data, the project will predict what products to stock, understand customer preferences better, and find the best prices for items. This approach promises to make Walmart's operations more efficient, enhance marketing strategies, and increase profits. This project aims to provide practical insights for better business decisions in the competitive retail market.

Project Overview	
Objective	The primary objective of the "Walmart Sales Analysis for Retail Industry with Machine Learning" project is to utilize machine learning techniques to analyze historical sales data from Walmart. This analysis aims to uncover insights that can optimize sales performance and decision-making within the retail industry.
Scope	The project will use data analysis to predict what products Walmart should stock, group customers by their shopping habits, and find the best prices for items. The goal is to help Walmart manage their stock better, advertise more effectively to customers, and make more money overall, which can help other stores too.
Problem Statement	
Description	The project aims to address the challenge of enhancing sales performance and operational efficiency in retail environments. Specific problems include: ➢ Inaccurate demand forecasting leading to inventory issues like overstock or stockouts. ➢ Ineffective customer segmentation impacting marketing strategies and customer retention. ➢ Suboptimal pricing strategies affecting revenue generation and

	competitiveness.
Impact	➢ **Operational Efficiency:** Accurate demand forecasting reduces inventory holding costs and improves supply chain management. ➢ **Marketing Effectiveness:** Effective customer segmentation enables targeted marketing efforts, boosting customer satisfaction and loyalty. ➢ **Revenue Optimization:** Optimizing pricing strategies can lead to increased sales revenue while maintaining competitiveness in the market.
Proposed Solution	
Approach	This project aims to leverage machine learning techniques to analyze and optimize sales performance within Walmart and the broader retail industry. This analysis focuses on understanding customer purchasing behaviors, forecasting product demand, and optimizing pricing strategies to enhance operational efficiency and revenue generation.
Key Features	➢ Using machine learning to predict sales trends, understand customer groups, and set prices effectively. ➢ Providing immediate advice to manage inventory better, improve marketing efforts, and boost sales. ➢ Adjusting prices in response to market changes and customer preferences. ➢ Adapting continuously to keep up with new shopping trends and customer habits

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	2 x NVIDIA V100 GPUs
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	1 TB SSD

Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, seaborn
Development Environment	IDE	Jupyter Notebook, Git
Data		
Data	Source, size, format	Kaggle dataset, 2.6MB, .csv