Online Sales Products Project Report

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Project Overview

The Online Sales Products Project is a full-stack data analytics and machine learning solution designed to simulate, analyze, and visualize synthetic sales data. It integrates SQL databases, KPI dashboards, machine learning models, and modern deployment frameworks to demonstrate how digital commerce can be enhanced with data-driven insights.

Project Structure

- data: Contains sales.db (synthetic SQL database) and outputs/ (saved charts).

- src: Scripts for data generation, analysis, ML modeling, and KPI utilities.

- app: FastAPI backend and Streamlit dashboards for revenue and KPI visualization.

- models: Stores the trained ML model (best_model.pkl).

- requirements.txt: Python dependencies.

- README.md: Documentation.

Report Highlights

- Synthetic Data Generation: Automated creation of realistic sales, product, and customer records.

- Revenue Analysis: Visualizations of monthly trends and category performance.

- KPI Dashboard: Streamlit interface showing total revenue, category breakdowns, and monthly performance.

- Machine Learning Integration: Regression models to predict revenue.

- FastAPI Backend: RESTful API endpoint /predict for serving ML predictions.

- Streamlit Frontend: Interactive dashboard for business users.

Technologies Used

- Python (Pandas, Matplotlib, Seaborn, Scikit-learn)

- SQLite for data storage

- FastAPI for backend API

- Streamlit for frontend dashboards

- Docker for microservice deployment

Business Impact

This project demonstrates how technical solutions can empower digital commerce by:

- Providing real-time revenue insights

- Enabling predictive analytics for sales forecasting

- Supporting decision-making with interactive dashboards

About the Author

Sohel Rana, a Bangladeshi national, is a Digital Currency Investor and Technical Lead. His expertise lies in blending technical rigor with business strategy to create scalable, intelligent solutions for modern commerce.

Sharing & Collaboration

This project is open for collaboration, feedback, and integration into broader digital commerce platforms. For inquiries or partnerships, please connect via professional channels.