Project Brief: Sales Forecasting for Langa Cash n Carry Stores

Project Title:

Sales Forecasting for Langa Cash n Carry Stores

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Date:

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Project Overview

Objective: To develop accurate and reliable sales forecasting models for Langa Cash n Carry Stores, helping to optimize inventory management, enhance financial planning, and support strategic decision-making.

Project Scope

Stores Covered:

- Langa
- Nyanga
- Gugulethu
- Pinelands
- Thornton

Product Categories:

- Fresh Produce
- Dairy
- Canned Goods
- Bakery
- Frozen Foods

Forecast Horizons:

- Weekly
- Monthly
- Quarterly
- Annual

Data Collection

Sources:

- Historical sales data from all store locations and product categories.
- External factors such as economic indicators and promotional periods.

Data Attributes:

- Date
- Sales for each store and product category
- Economic indicators
- Holiday indicators
- Promotion periods

Methodology

Data Preparation:

- Handle missing values by imputing with the median.
- Create additional features (e.g., day of the week, month, year).

Exploratory Data Analysis (EDA):

- Visualize sales trends over time.
- Analyze sales distribution by day of the week and by month.

Model Selection and Training:

- Choose ARIMA (AutoRegressive Integrated Moving Average) model for time series forecasting.
- Split data into training and testing sets.
- Train and optimize the ARIMA model.

Model Evaluation:

- Evaluate model performance using RMSE (Root Mean Squared Error).
- Compare actual vs. predicted sales values.

Forecasting:

- Generate sales forecasts for the next year.
- Visualize historical vs. forecasted sales data.

Key Deliverables

1. **Data Preparation**:
   - Clean dataset ready for analysis.
2. **Exploratory Data Analysis**:
   - Visualizations showing sales trends and distributions.
3. **Forecasting Models**:
   - Trained ARIMA model with optimized parameters.
4. **Model Evaluation**:
   - Evaluation metrics and visual comparison of actual vs. predicted sales.
5. **Forecasts**:
   - Sales forecasts for weekly, monthly, quarterly, and annual horizons.
6. **Power BI Dashboard**:
   - Interactive dashboard for exploring sales data and forecasts.

Expected Outcomes

- Improved inventory management through accurate sales forecasts.

- Enhanced financial planning and budgeting based on forecasted sales.
- Better promotional planning by identifying peak sales periods.
- Data-driven decision-making to support strategic business initiatives.

Timeline

1. **Week 1-2**: Data Collection and Preparation
2. **Week 3-4**: Exploratory Data Analysis
3. **Week 5-6**: Model Selection and Training
4. **Week 7**: Model Evaluation
5. **Week 8**: Forecast Generation and Dashboard Creation
6. **Week 9**: Presentation and Reporting

Stakeholders

- **Project Sponsor**: Joanita Puentes
- **Project Manager**: Grant Matches
- **Data Analyst**: Linda Motene
- **Store Managers**: Representatives from Langa, Nyanga, Gugulethu, Pinelands, and Thornton stores.

Conclusion

This project aims to empower Langa Cash n Carry Stores with advanced sales forecasting capabilities, enabling the business to make informed decisions, optimize operations, and achieve sustainable growth. By leveraging data and analytics, the stores can better serve their customers and stay competitive in the retail market.