PROJECT MODEL

SUPERMARKET SALES ANALYSIS USING MACHINE LEARNING

Project Objective:

This project performs a series of analysis aimed at extracting valuable insights from the dataset. The focus of this project is on the sales and product data of a supermarket. The sales data is crucial for businesses to understand their revenue patterns, market trends and customer behaviour.

Scope:

- INCLUSIONS:
  - Analysis of sales data: Examining transaction data to understand customer and market behaviour.
  - Forecasting future trends: Using machine learning models to predict future sales based on historical data.
  - Developing actionable insights: Providing recommendations for improving business operations, customer retention, or revenue growth based on the analysis.
- EXCLUSIONS:
  - Real-time data collection: The project will only analyse pre-existing data, not gather live data from the supermarket systems.
  - Integrated with operational systems: The project will not implement its findings into the supermarket's existing processes.

Methodology/Procedure:

- DATA COLLECTION:

  Gathered historical sales transaction data in .csv format.Here, the below dataset hyperlink takes you to the dataset.

  The dataset is one of the historical sales of supermarket company which has recorded in 3 different branches for 3 months data.

- DATA PREPROCESSING:

  In this step we search for the existence of the missing data. If occurs we would deal with them and finally normalize the data.

  As per the programming performed over the data, we don’t have any missing values or any kind of redundant content.

- EXPLORATORY DATA ANALYSIS:

  Visualize patterns in revenue and customer behaviour using libraries like Matplotlib and Seaborn.

  We used various models and formats to analyse the data including the piechart, barchart, linechart, doughnut etc.,

- DEPLOYMENT:

  Finally, we present findings via dashboards or reports for stakeholders.

Tools and technologies:

- Programming language: Python
- Platform: Jupyter notebook
- Libraries used: Pandas, NumPy, Seaborn, Matplotlib.

Deliverables:

- Cleaned and processed dataset.
- Visualizations showcasing trends in customer behaviour and revenue.
- Insights and recommendations for business improvements.

Outcomes and benefits:

- Output:
  - Detailed insights into customer behaviour, sales trends, and product performance.
  - Customer segmentation for personalized marketing strategies.
  - Visual dashboards and reports for easy stakeholder interpretation.
- Benefits:
  - Increased revenue through targeted promotions and optimized pricing.
  - Improved inventory management, reducing waste and stockouts.
  - Enhanced customer satisfaction via tailored campaigns.
  - Cost savings by optimizing resources and operations.
  - Data-driven support for strategic business decisions.

CONCLUSION

In conclusion, Machine Learning and Artificial Intelligence techniques implemented through Python offer a powerful and groundbreaking approach to super market analysis. By leveraging their ability to analyze vast datasets and identify complex relationships.

Based on the insights, branch c had the highest revenue and is located in the city Naypyitaw. This may be as a result of local demand and economic activity in the city. The city is also known as the headquarters for several government agencies, this may have an influence on the economic activity. The average revenue generated from regular customers is more than the new customers. This is probably because of the relationship and trust that has been built overtime, loyalty and convenience. They must be happy with the products the supermarket sells, hence the reason for their constant patronage. New customers are probably new to the supermarket or might be visiting the area, hence the reason for the slight difference in revenue. And we could generate many other outcomes in which some of them are its pros and the other are its cons.

By analysing the given data we could give some suggestion for the development of the business. Few of them are discussed. Establish customer loyalty programs to boost recurring business. To establish a good relationship, concentrate on improving new client’s experience. Offer special discounts to encourage their continuous patronage. Promote targeted marketing campaigns and products that cater to the specific preferences of female customers. Offer promotions and create a personalized shopping experience to further engage and retain this customer segment.