

Walmart Inventory Optimisation

Case study

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ABOUT US

Walmart is an American multinational retail corporation that operates a chain of hypermarkets (also called supercenters), discount department stores, and grocery stores in the United States and 23 other countries. It is headquartered in Bentonville, Arkansas. The company was founded by brothers Sam and James "Bud" Walton in nearby Rogers, Arkansas in 1962 and incorporated under Delaware General Corporation Law on October 31, 1969. It also owns and operates Sam's Club retail warehouses. Walmart is the world's largest company by revenue, according to the Fortune Global 500 list in October 2022.



BACKGROUND

- Walmart, the world's largest retailer, is facing operational challenges in managing inventory efficiently across its thousands of stores worldwide. With fluctuating customer demand, promotions, and external factors like weather impacting sales, Walmart's operations team is under pressure to ensure optimal stock levels without overspending on excess inventory or losing sales due to stockouts.
- To maintain a competitive edge and meet growing customer demands, Walmart aims to implement real-time demand forecasting by analyzing sales data. This process will involve understanding the influence of customer purchasing behavior, external factors like weather, and the effectiveness of promotions. The analysis will guide Walmart's inventory decisions, reduce costs, and enhance customer satisfaction.



PROBLEM DEFINITION

Walmart needs a data-driven inventory optimization solution that minimizes both stockouts and overstocking by forecasting demand based on past sales data. The goal is to develop a scalable approach that adjusts inventory levels dynamically using real-time insights from the analysis.



PROBLEM

AGILE METHODOLOGY

This project follows an Agile methodology, broken down into sprints for continuous value delivery and adaptation to insights throughout the process.



STAKEHOLDERS

- *Internal Stakeholders:*
 - Inventory Managers: Will use the demand forecasting insights to ensure optimal stock levels across stores.
 - Store Managers: Responsible for managing in-store inventory based on demand.
 - Marketing Team: Understands how promotions impact sales and tailors campaigns accordingly.
- *External Stakeholders:*
 - Customers: Their purchasing behavior directly influences demand forecasts.
 - Suppliers: Will receive more accurate forecasts to ensure timely and sufficient product delivery.



KEY QUESTIONS FOR STAKEHOLDERS



1. *Inventory Managers:*

- How can we improve inventory accuracy and ensure that stock levels match demand?
- What factors are contributing to stockouts, and how can we address them?

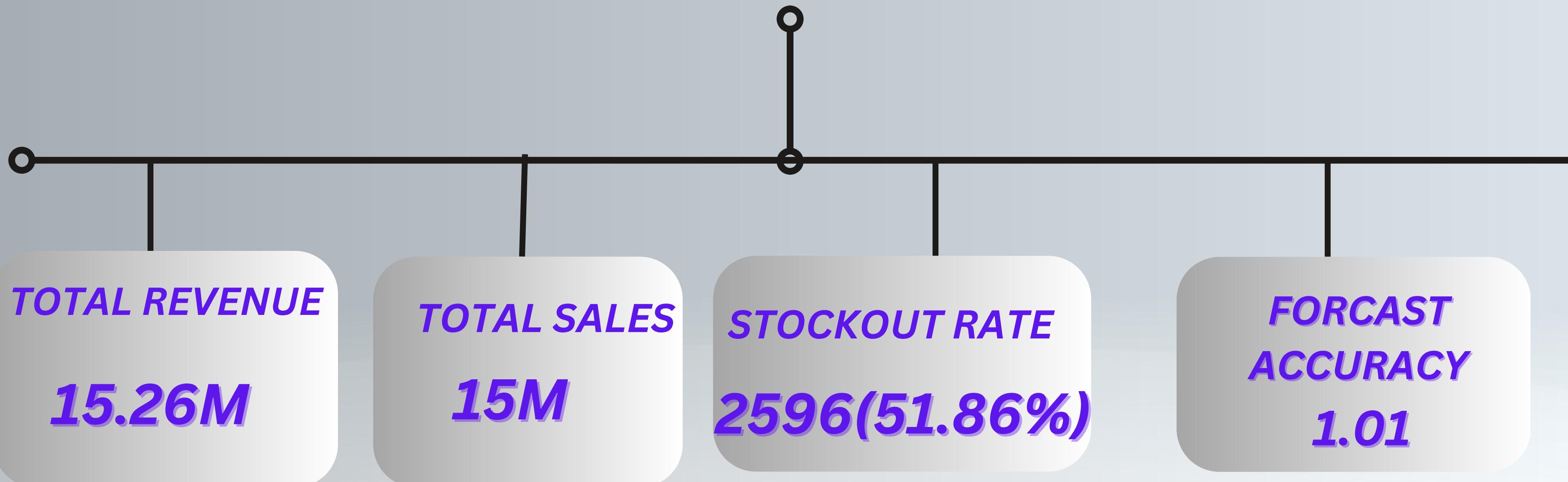
2. *Store Managers:*

- How can we allocate inventory more efficiently across stores based on local demand patterns?
- How do promotions and weather influence sales at different store locations?

3. *Marketing and Promotions Team:*

- What is the return on investment (ROI) for promotions, and how do they affect demand?

KEY PERFORMANCE INDICATOR (KPI)



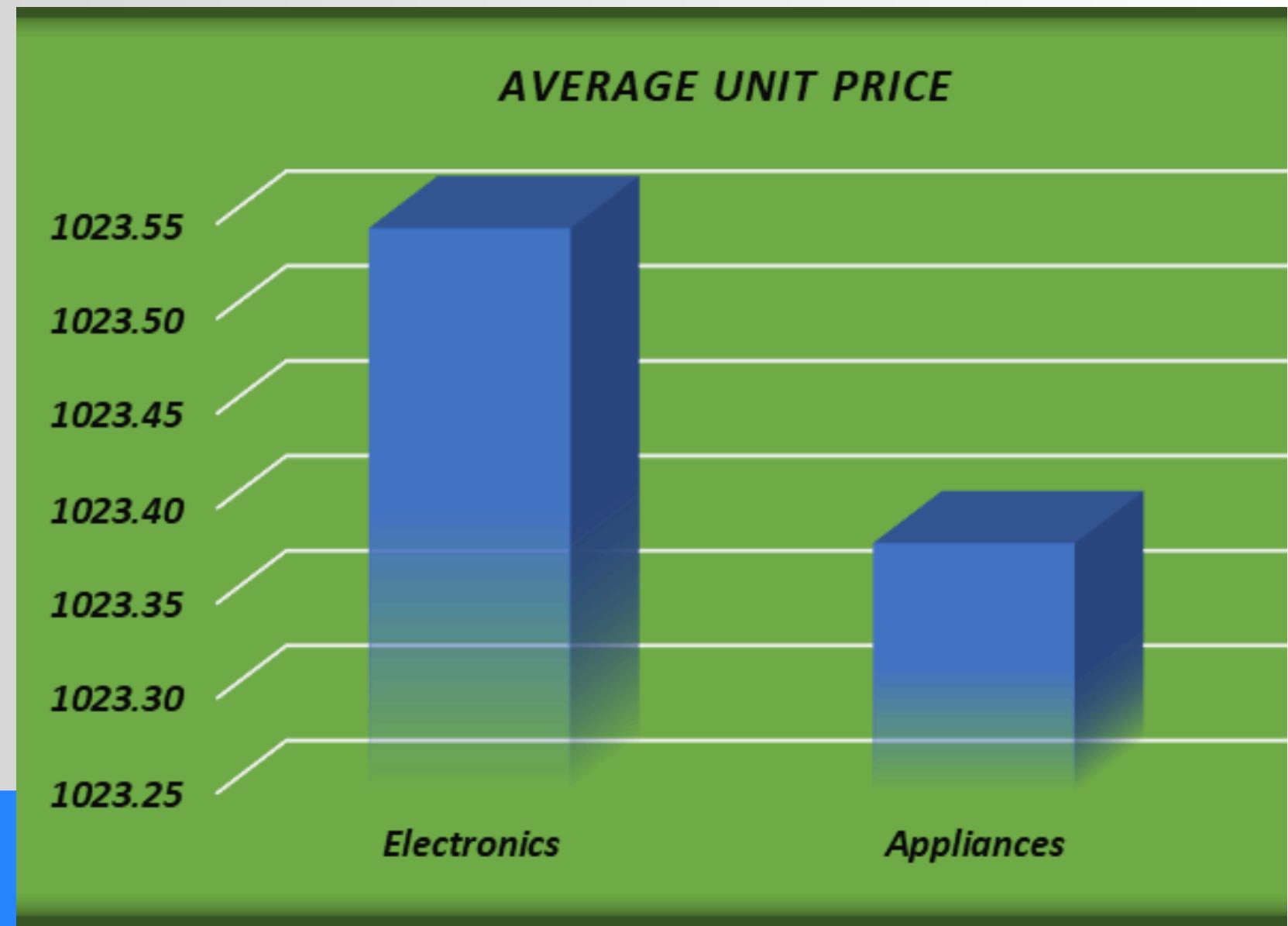
Recommendation

Q1: What is the total sales volume across all Walmart stores?

14914 is the total sales volume across all walmart stores.

Q2: What is the average unit price of all products sold, by category?

The values suggest that, on average, electronics(1023.52) have a slightly higher unit price compared to appliances(1023.36).



Recommendation

Q3: Which stores are underperforming in terms of sales volume?

Based on the visualization, the store which are not performing well in sales among all the stores are no.6 which rates nearly 658.

Q4: What percentage of transactions involved promotions?

Nearly 52.14% of transactions is involved for the customers who applied promotion.



Recommendation

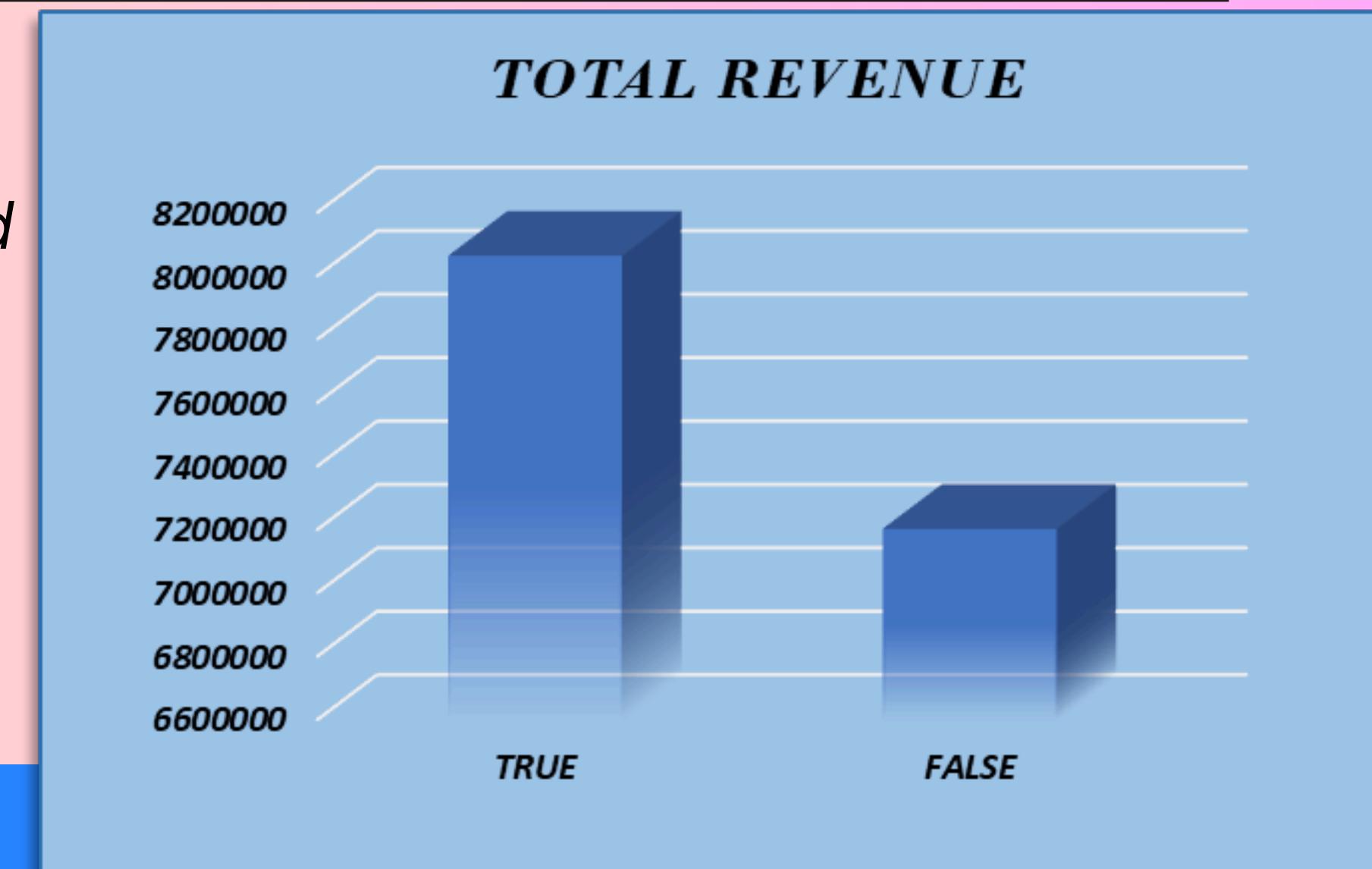
Q5: What is the total revenue generated from sales during promotional events?

During promotional event, the total revenue generated through sales is 8062411.03

Q6: Which product categories see the largest increase in demand during holidays?

Electronics shows significantly higher demand compared to Appliances, with values around 3900.

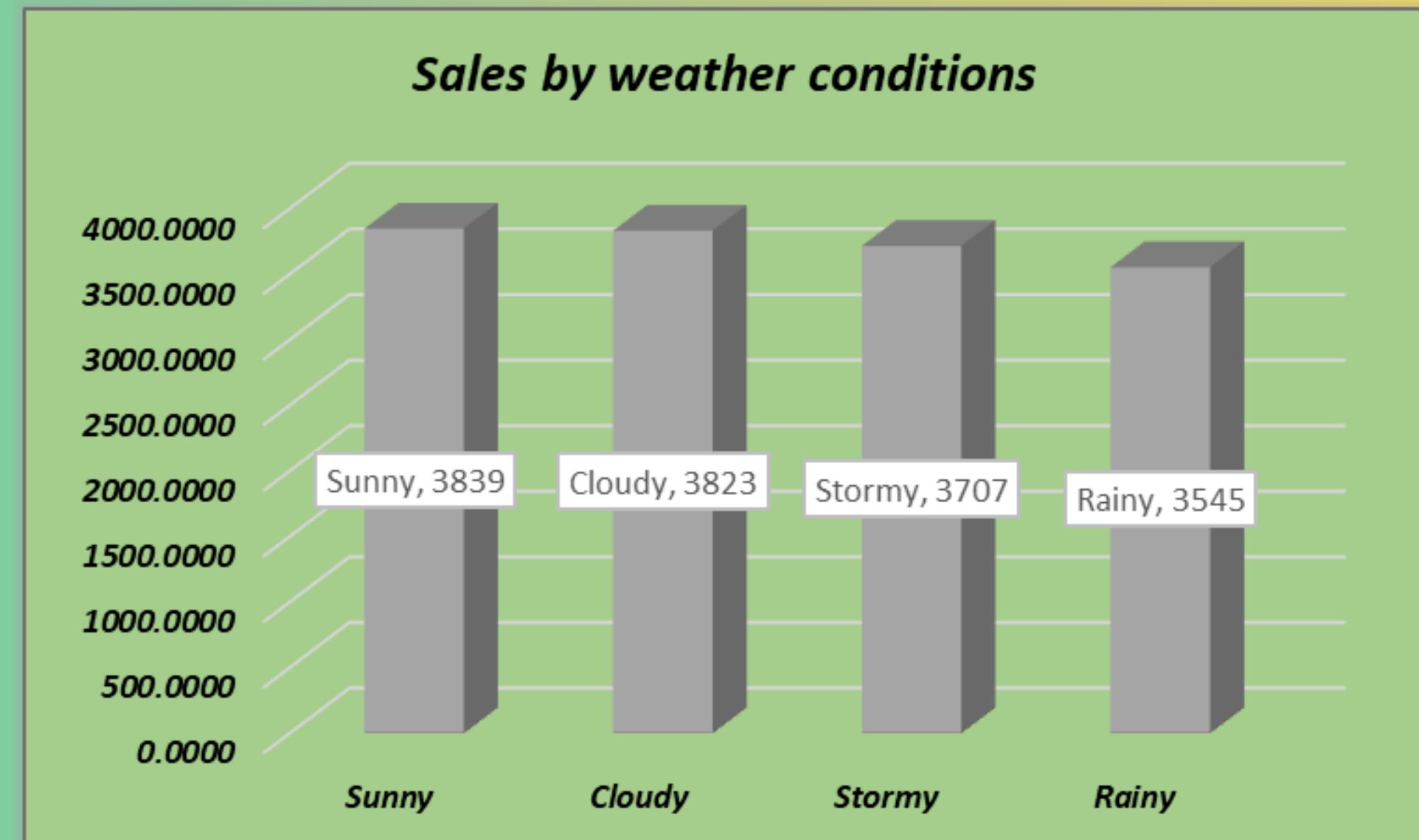
Appliances demand is lower, close to 3500.



Recommendation

Q7: What is the correlation between weather conditions and sales performance?

Among the different weather conditions, sunny has the highest sales performance nearly 3850 and rainy has the lowest sales performance nearly 3500.



Recommendation

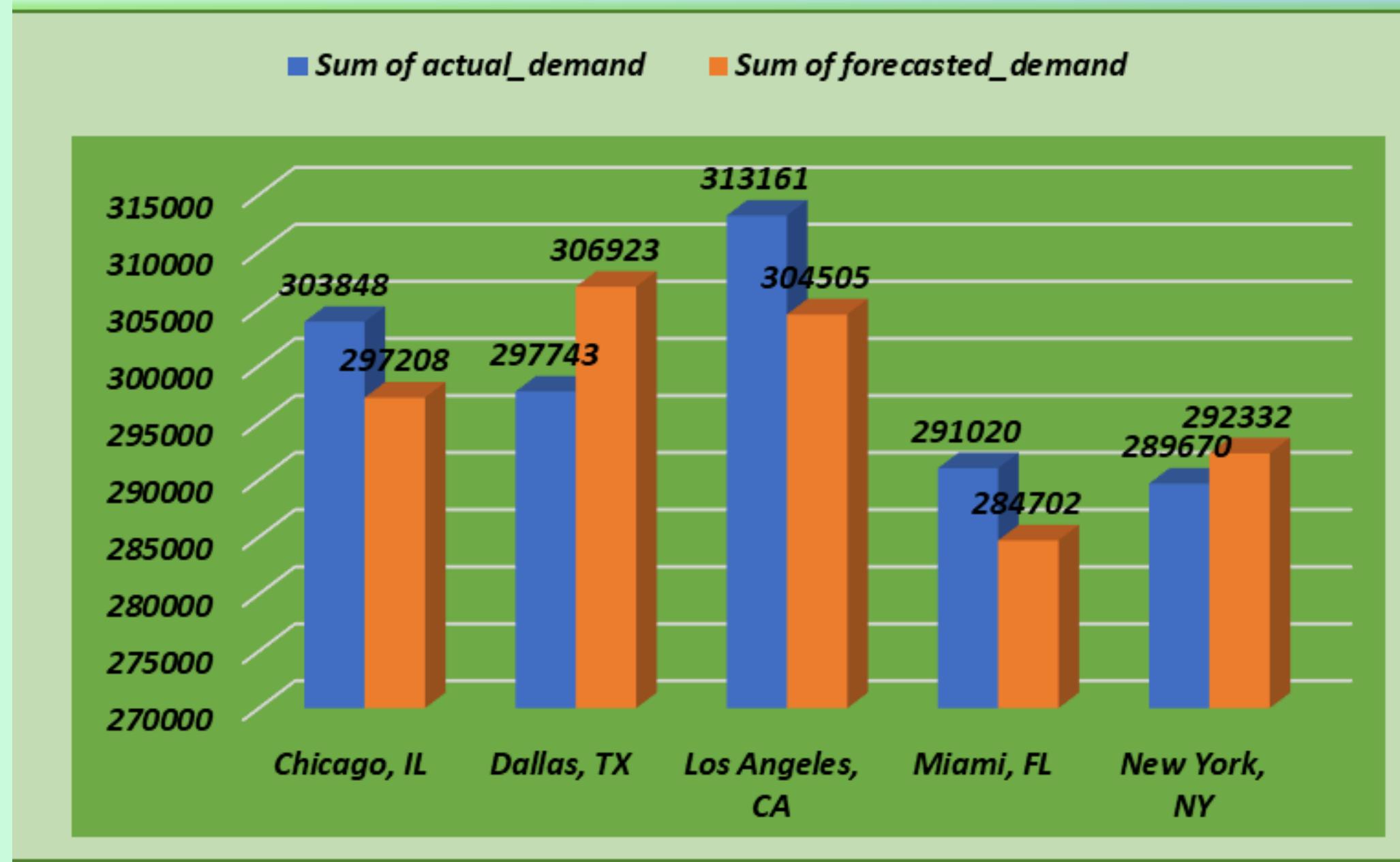
Q8: How does customer loyalty level affect purchasing patterns?

- Platinum customers make up the largest portion of purchases, accounting for 26.12% of the total quantity sold.
- Silver customers follow closely, contributing 25.66% to the total quantity sold.
- Bronze customers account for 24.90%.
- Gold customers make up the smallest portion, with 23.31% of the total quantity sold.



Recommendation

Q9: What is the forecast accuracy for each store location?

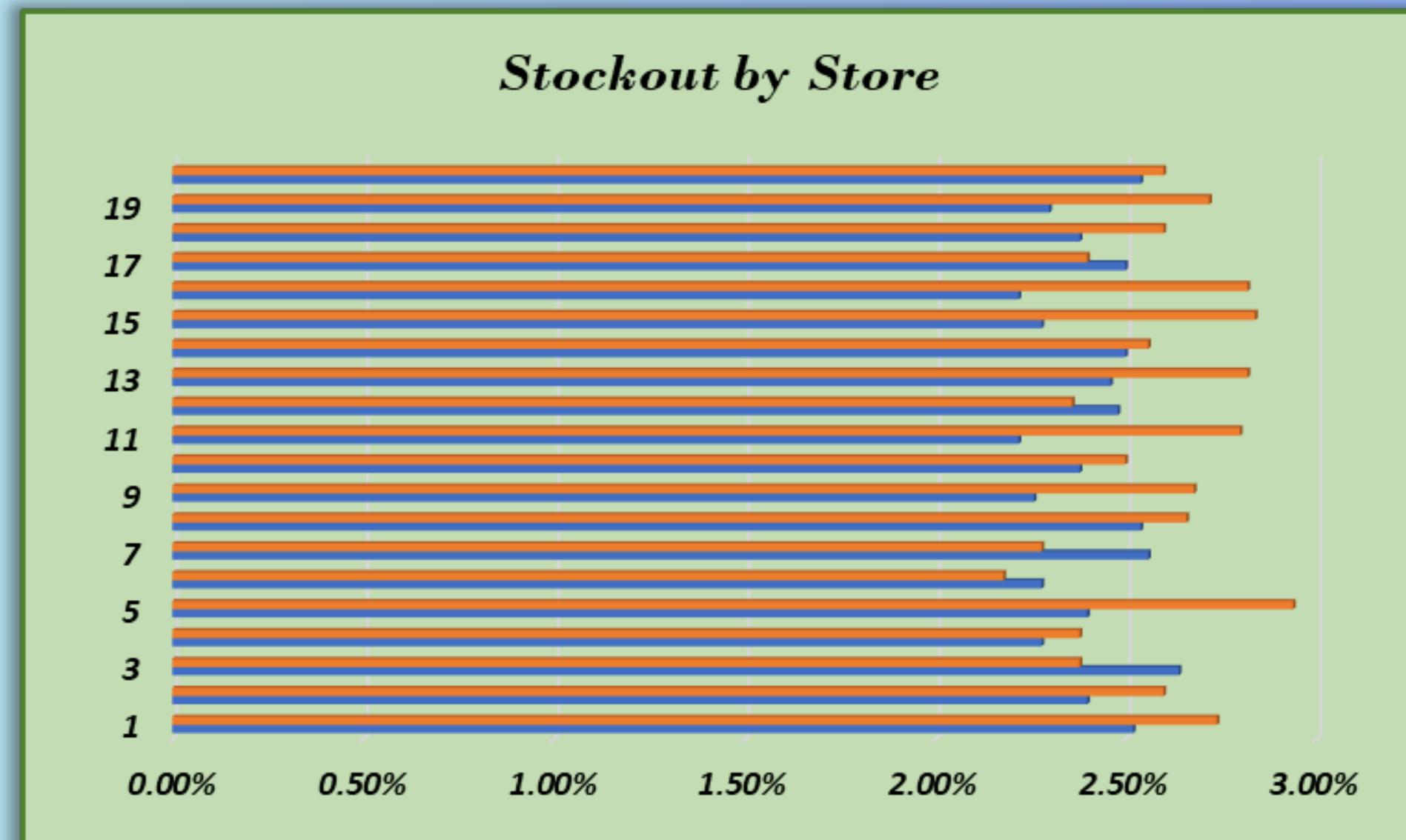


101% is the forecast accuracy for each store.

Recommendation

Q10: What is the stockout rate at each store?

Among all the stores from 1 to 20 ,the average stockout rate is 51.86% for the stores as it varies from states and also products.



Conclusion

- ***Needs Improvement in category appliances:***

Here, it suggest that on average, electronics have a slightly higher unit price compared to appliances.

- ***Customer loyalty level among products:***

Target customers with availing them with different offers specially on festive time.

- ***Availability of products based on weather conditions:***

Ensure products availing based on weather conditions to avoid stockout and stockover.

THANK YOU



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