

Inventory Analysis Report

Introduction

This report provides an analysis of the inventory distribution for Mint Classics Company, a retailer of classic model cars and other vehicles. The company is considering closing one of its storage facilities, and this analysis aims to provide data-driven recommendations for reorganizing or reducing inventory while maintaining timely service to customers.

Data Overview

The database includes information on products, orders, customers, employees, order details, and warehouse storage. The time period covered in the dataset is from **2003-01-06 to 2003-12-01**.

Mint Classics Company operates **seven product lines**:

- Classic Cars
- Motorcycles
- Planes
- Ships
- Trains
- Trucks and Buses
- Vintage Cars

Inventory Distribution

There are **four warehouses** (South, North, East, West), each with varying levels of inventory. There are 100 different product types with each type stored in only one warehouse, but a warehouse can contain multiple product lines.

Warehouse Name Product Line

East	Classic Cars
North	Motorcycles
North	Planes
South	Ships
South	Trains
South	Trucks and Buses
West	Vintage Cars

The **East warehouse** holds the highest stock at **212,249 items**, while the **South warehouse** has the lowest stock at **64,839 items**.

Warehouse Name Total Stock

East	212,249
West	124,880
North	100,701
South	64,839

The most stocked product is the **2002 Suzuki XREO**, stored in the North warehouse.

Sales and Stock Analysis

A comparison of inventory levels and sales shows that the **East warehouse**, which stores Classic Cars, has the highest number of orders (**939 orders**). The West warehouse follows with **873 orders**.

Warehouse Product Line		Total Stock Orders	
West	Vintage Cars	124,880	873
South	Ships	12,292	184
South	Trains	16,696	119
South	Trucks and Buses	35,851	370
North	Motorcycles	69,401	399
North	Planes	31,300	254
East	Classic Cars	220,596	939
Grand Total -		511,016	3,138

Non-Moving Products

There are **11 product types** in the East warehouse that have never been ordered making **28.94% of the total inventory in the East warehouse inactive**. If these inactive products were removed, the projected stock would be **156,754 items**.

Warehouse Name Total Stock Dormant Stock Dormant Stock % Projected Stock After Removal

East	220,596	63,842	28.94%	156,754
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Warehouse Capacity vs. Stock

Warehouse capacity varies across locations. The **West warehouse** is **underutilized** relative to its total capacity and could accommodate more stock. The **East warehouse** also has significant unused capacity.

Warehouse Name % Capacity Used Total Stock Full Capacity Remaining Capacity

South	75%	64,839	86,452	21,613
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Warehouse Name % Capacity Used Total Stock Full Capacity Remaining Capacity

North	72%	100,701	139,862.5	39,161.5
East	67%	212,249	316,789.55	104,540.55
West	50%	124,880	249,760	124,880

Shipping Efficiency

Orders were analysed to determine how many were shipped within **24 hours**.

Warehouse Name Shipped Within 24 Hrs Shipped After 24 Hrs

East	14	13
South	10	9
West	4	20
North	0	20

- **East and South warehouses** have high shipping efficiency, with a near-equal balance of shipments made within and after 24 hours.
- **North warehouse** is the least efficient, with all shipments delayed beyond 24 hours.
- Despite delays, all shipments met the required deadlines.

Warehouse Absorption Capacity and Product Scale

In the analysis of warehouse absorption capacity, I considered both warehouse capacity and product scale distribution. Warehouse capacity was evaluated by calculating the active stock (total stock minus dormant stock) and comparing it to the estimated full capacity of each warehouse based on its percentage capacity.

Product scale distribution was also factored into this analysis. Products were categorized into large, medium, and small scales. The stock quantities in each category were assessed to determine whether a warehouse could absorb stock from another warehouse. This analysis took into account both the dormant stock (products that are not moving) and active stock, ensuring that the capacity calculations reflected realistic, current conditions.

By combining these factors (capacity and scale distribution), I determined whether one warehouse could absorb stock from another. The analysis used the "Can Absorb" or "Cannot Absorb" status based on the available space and the matching product scales between source and target warehouses.

The **East warehouse** has enough available capacity to absorb stock from the **West warehouse**. However, based on the active stock and product scales, the **East** warehouse cannot absorb stock from the **North** or **South** warehouses.

Source Warehouse	Source Active Stock	Target Warehouse	Target Active Stock	Available Space	Absorption Status
East	220,596	North	100,701	39,162	Cannot Absorb
East	220,596	South	64,839	21,613	Cannot Absorb
East	220,596	West	124,880	124,880	Can Absorb
North	100,701	East	220,596	108,652	Cannot Absorb
North	100,701	South	64,839	21,613	Cannot Absorb
North	100,701	West	124,880	124,880	Cannot Absorb
South	64,839	East	220,596	108,652	Cannot Absorb
South	64,839	North	100,701	39,162	Cannot Absorb
South	64,839	West	124,880	124,880	Cannot Absorb
West	124,880	East	220,596	108,652	Can Absorb
West	124,880	North	100,701	39,162	Cannot Absorb
West	124,880	South	64,839	21,613	Cannot Absorb

Recommendations

Based on the analysis:

1. **Redistribution of Inventory:**

The **East warehouse** can absorb stock from the **West warehouse**, as the **East warehouse** has available space and efficient operations. This would free up space in the **West warehouse**, which is currently underutilized.

2. **Non-Moving Products:**

A significant portion (28.94%) of the stock in the **East warehouse** is dormant and has not moved in the entire period. Removing these non-moving products would improve the overall inventory flow and optimize warehouse space. This would reduce total stock from **220,596** to **156,754** items.

3. **Shipping Efficiency Improvements:**

The **West** and **North** warehouses have shipping delays that need to be addressed to enhance efficiency and meet customer expectations.

Conclusion

The analysis highlights areas where inventory redistribution and stock optimization can improve operational efficiency. Specifically, by addressing dormant stock and underutilized warehouse space, the company can streamline operations and ensure better service levels to customers.

