



SUPPLY CHAIN ANALYSIS

Domain: Supply Chain Management
Function: Inventory Optimization

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PROBLEM STATEMENT

The company is facing challenges in optimizing its inventory management, which leads to overstocking or understocking issues. This inefficiency not only impacts the storage costs and capital tied up in inventory but also affects the ability to meet customer demand promptly.



OBJECTIVE

The objective of this project is to enhance the efficiency of the supply chain by optimizing inventory management. This will involve identifying the key products to stock, determining optimal reorder points, and ensuring timely fulfillment of customer orders. By focusing on critical inventory insights, the company aims to reduce storage costs, prevent stockouts, and improve overall customer satisfaction.



TOOLS USED

Analytical & Visual:

- ✓ Microsoft excel

Presentation:

- ✓ Microsoft power point

DATASET OVERVIEW

Data source: Internet

Time period: 2015–2018

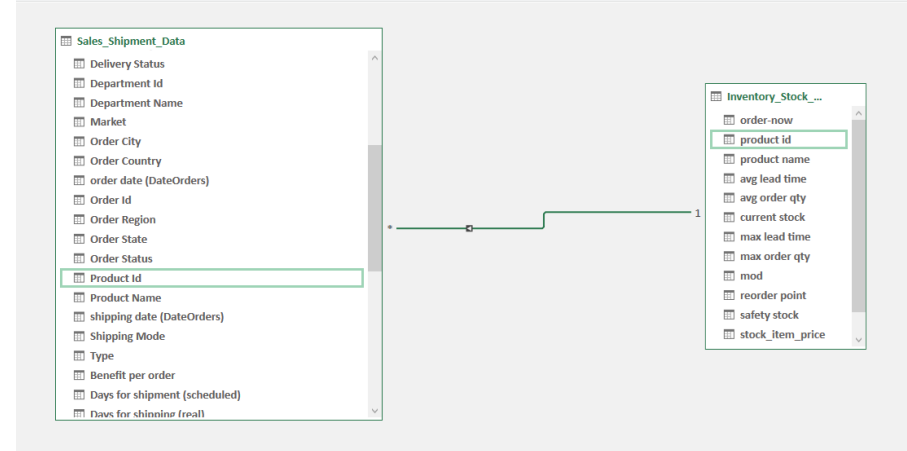
Data size: Sales_Shipment_Data
Table(180519,46), Inventory_stock_Data
table(118,11)

Key columns:

Actual Columns: Sales per customer,
Customer Segment, Order Status, Class,
Shipping Mode, Current Stock, Order Profit
Per Order, Order Item Quantity, Sales Per
Customer, Order Item Discount, order-now

Dax/Calculated columns:

stock_item_price, product_class,
sales_compared_to_prev_year



Data Model

ANALYSIS WORKFLOW

1	Load data in excel	Aplied Add column	5
2	Changed data types	DAX	6
3	Replaced Values	Pivot table analysis	7
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PARIMARY INSIGHTS

\$1.59M

Inventory
Value

18.97k

Total Units in
Inventory

118

Inventory Unit

54

Reorder Unit

\$33.05M

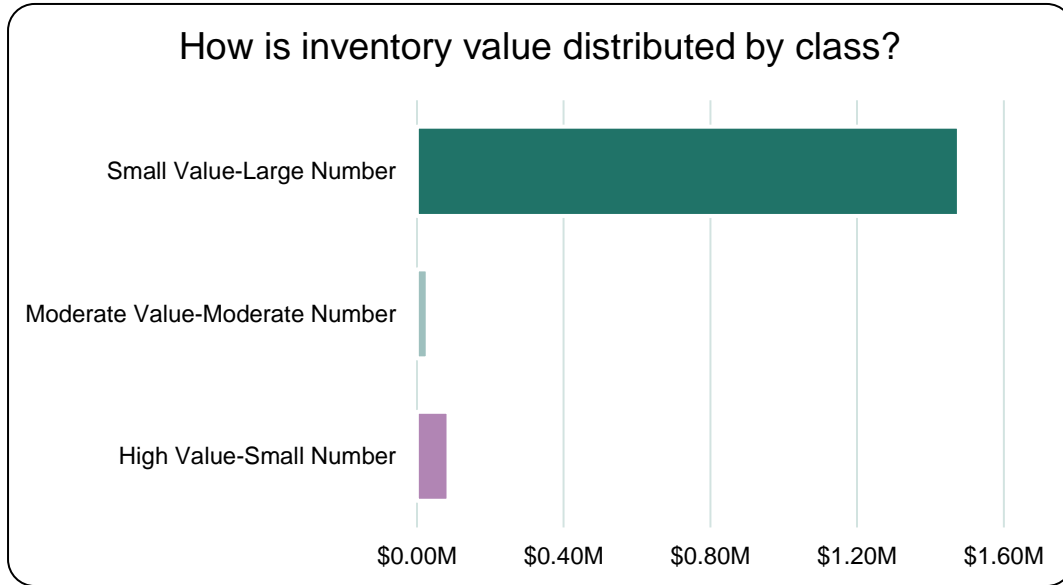
Total Sales



Small Value-Large Number

Highest-stocked product class

SECONDARY INSIGHTS



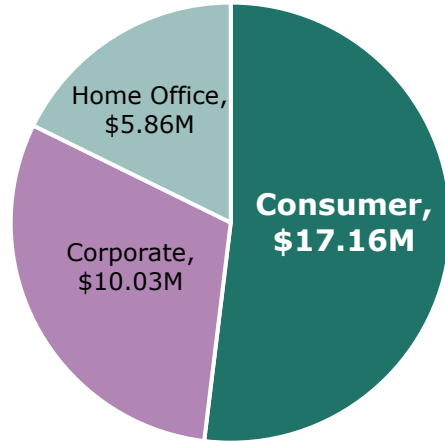
The majority of the inventory value is concentrated in the **small value, large number** class.

Recommendation:

Evaluate the demand and turnover rate of the small value, large number items to ensure they justify their inventory levels. Optimize stocking strategies by considering the profitability and storage costs of these items. For high-value and moderate-value items, ensure adequate stock to meet demand without overstocking. Implement inventory management practices, such as ABC analysis, to balance inventory levels and improve overall efficiency.

SECONDARY INSIGHTS

What is the revenue breakdown by customer segment?



More than half of the sales coming from **consumer segment.**

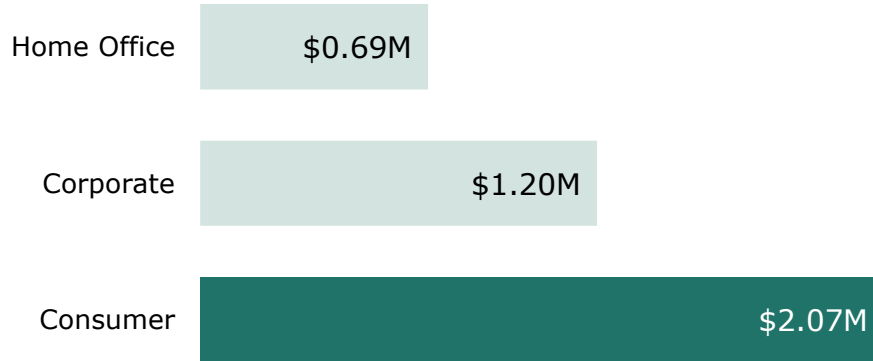
Recommendation:

Focus on maintaining and enhancing the consumer segment through targeted marketing and personalized customer experiences to sustain and grow this significant revenue source.

Simultaneously, develop strategies to boost sales in the corporate and home office segments, such as tailored solutions, bulk pricing, and loyalty programs, to diversify revenue streams and reduce dependency on the consumer segment.

SECONDARY INSIGHTS

What is the profit breakdown by customer segment?



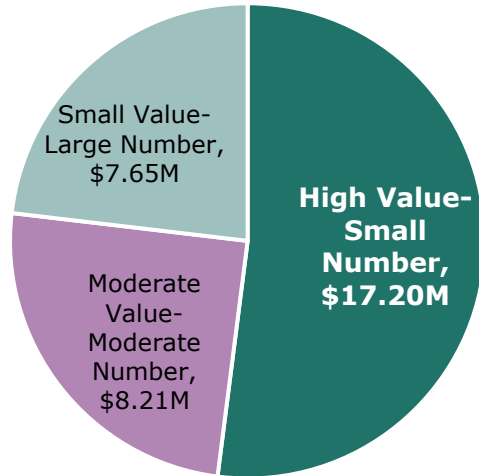
More than half of the profit coming from **consumer segment.**

Recommendation:

Focus on enhancing the profitability of the consumer segment through strategic pricing, upselling, and loyalty programs to sustain this key revenue source. Additionally, implement initiatives to increase profitability in the corporate and home office segments, such as offering tailored services, optimizing product mix, and exploring cost-saving opportunities to balance profit distribution and reduce reliance on the consumer segment.

SECONDARY INSIGHTS

What is the revenue breakdown by class?



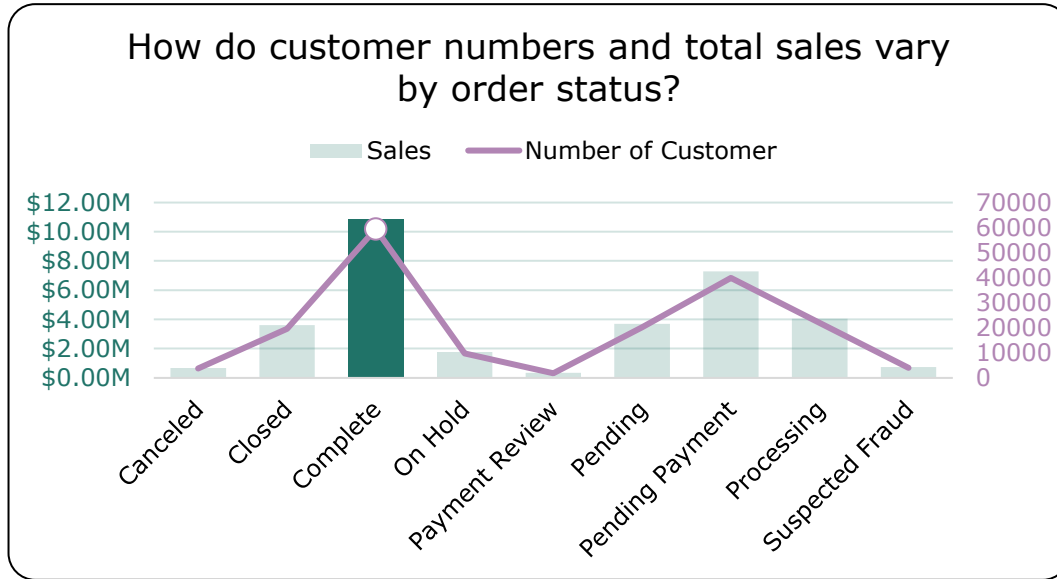
More than half of the sales coming from
High value-Small number segment.

Recommendation:

Focus on maintaining and enhancing the high value small number segment through targeted marketing and personalized customer experiences to sustain and grow this significant revenue source.

Simultaneously, develop strategies to boost sales in other segments, such as tailored solutions, bulk pricing, and loyalty programs, to diversify revenue streams and reduce dependency on the high value small number segment.

SECONDARY INSIGHTS

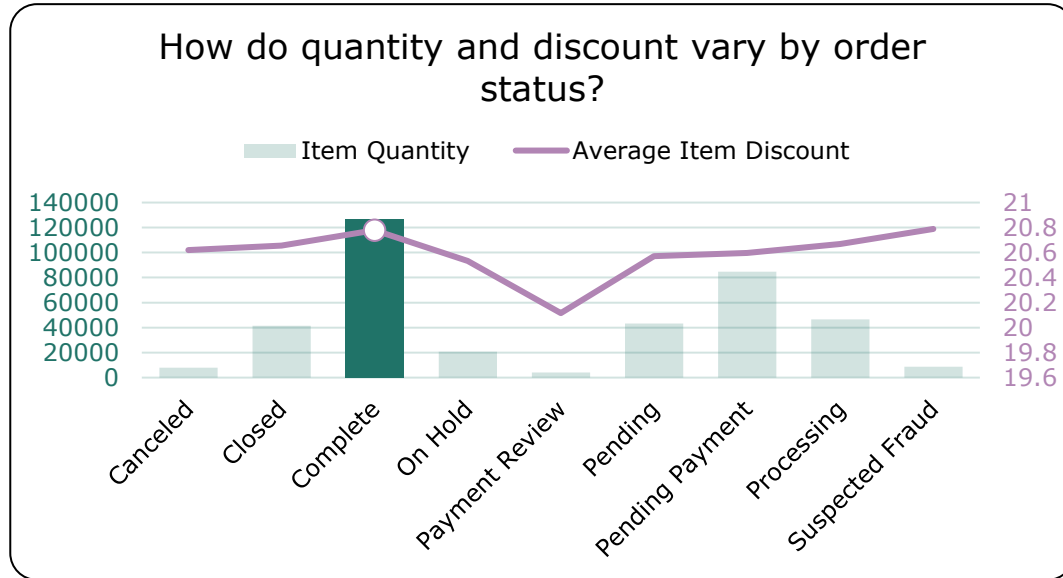


Sales and **number of customers** is highest for **completed orders**.

Recommendation:

Prioritize strategies that streamline and expedite order completion processes to maximize sales and customer satisfaction. Address issues causing delays or cancellations by enhancing order management systems and improving communication with customers. Implement measures to reduce pending and on-hold orders by identifying and mitigating common bottlenecks. Additionally, reinforce fraud detection and prevention mechanisms to minimize suspected fraud cases, ensuring a secure shopping environment for customers.

SECONDARY INSIGHTS



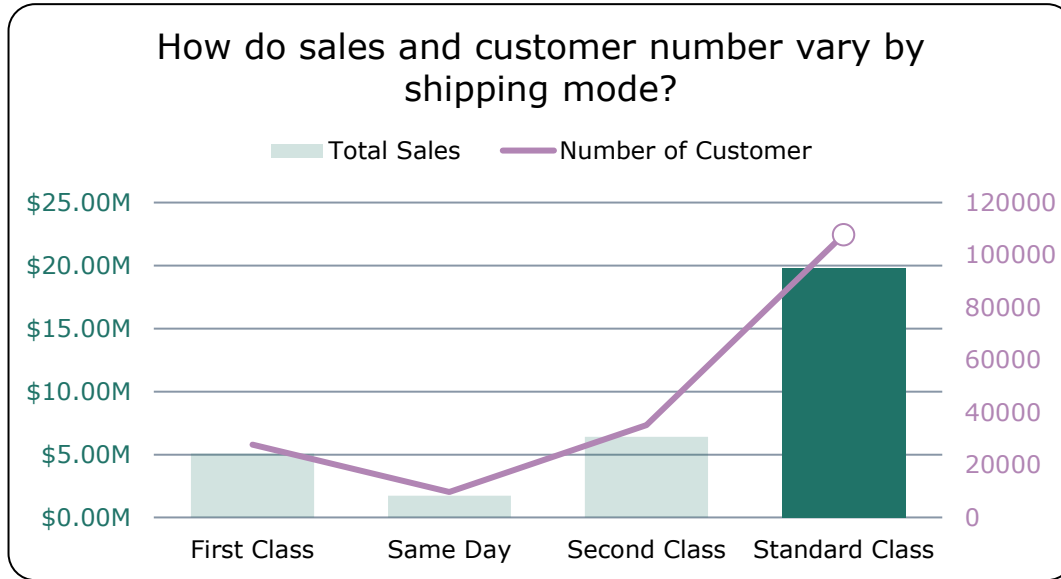
Quantity and **discount** is highest for **completed orders**.

Recommendation:

Focus on streamlining the order fulfillment process to reduce orders in statuses such as "Pending," "Pending Payment," and "On Hold." Identify and address any bottlenecks or issues that may be hindering the completion of these orders.

Additionally, review the discount strategy for orders in other statuses to evaluate if targeted discounts can help convert more orders to the "Complete" status, thereby maximizing revenue and customer satisfaction.

SECONDARY INSIGHTS



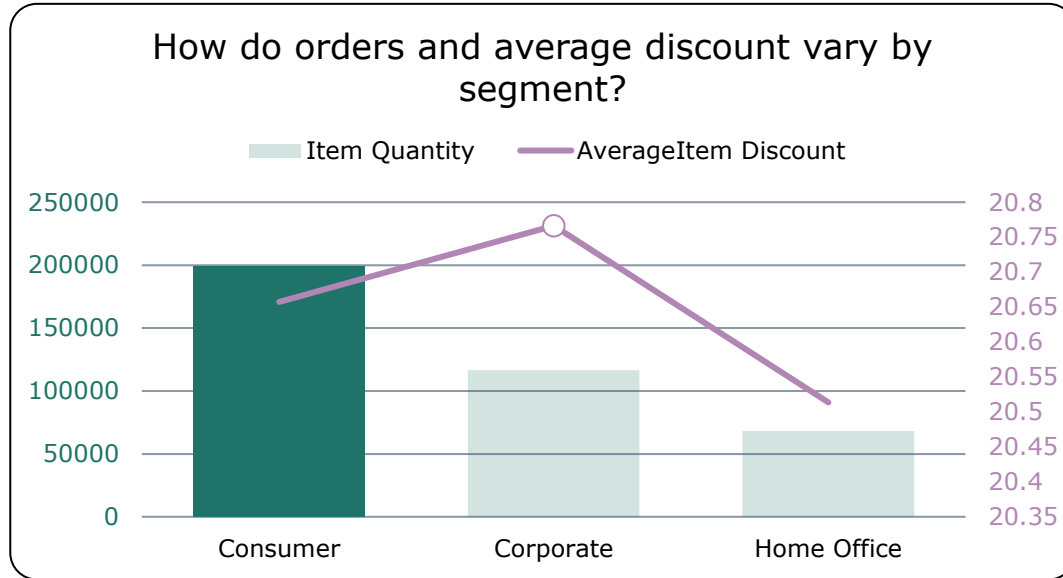
Standard Class

has highest sales and customers.

Recommendation:

Prioritize strategies that streamline and expedite order completion processes to maximize sales and customer satisfaction. Address issues causing delays or cancellations by enhancing order management systems and improving communication with customers. Implement measures to reduce pending and on-hold orders by identifying and mitigating common bottlenecks. Additionally, reinforce fraud detection and prevention mechanisms to minimize suspected fraud cases, ensuring a secure shopping environment for customers.

SECONDARY INSIGHTS



While the consumer segment accounts for the highest order volume, **the corporate segment** enjoys a higher average discount.

Recommendation:

Evaluate the effectiveness of discount strategies across segments and consider aligning discounts with order volumes to optimize profitability. Additionally, explore opportunities to increase order volumes in the high-discount corporate segment through targeted marketing and tailored offerings.

SECONDARY INSIGHTS

What is the yearly profitability trend?



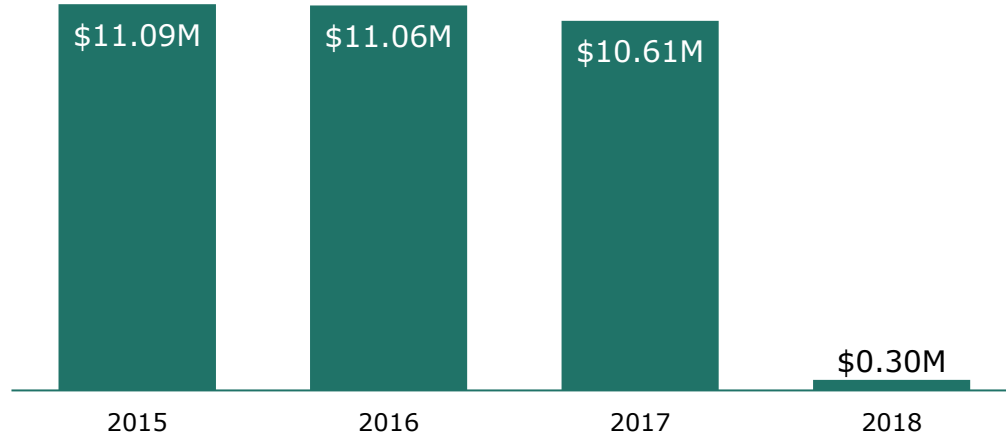
Profit have been consistently declining year over year.

Recommendation:

Conduct a detailed analysis to identify factors driving the profit decline, such as rising costs, pricing strategy, or operational inefficiencies. Implement cost-control measures, optimize pricing strategies, and improve operational efficiencies. Additionally, explore new revenue streams and enhance product offerings to drive profitability.

SECONDARY INSIGHTS

What is the yearly revenue trend?

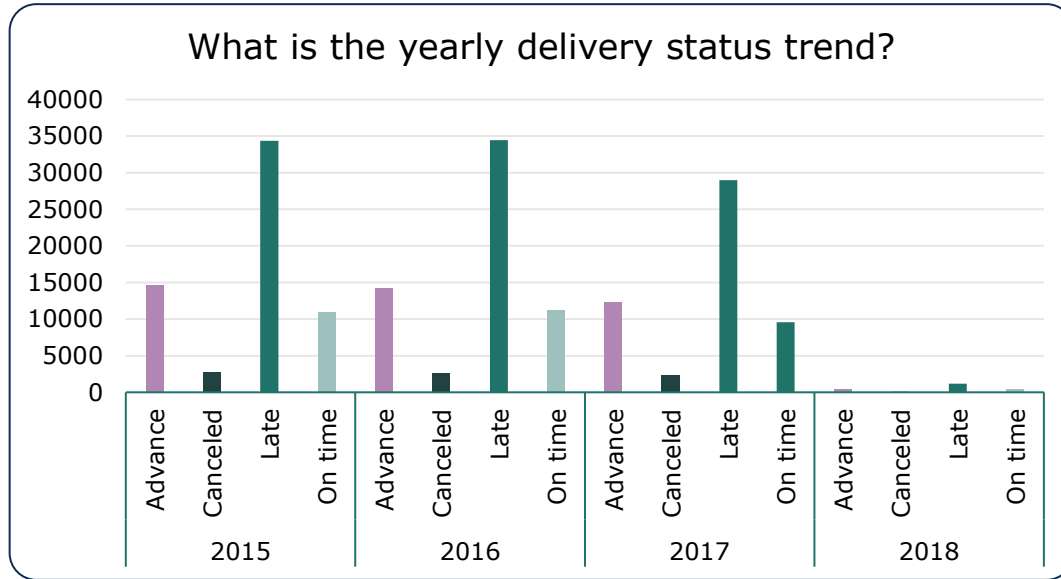


Sales have been consistently declining year over year.

Recommendation:

To address the declining sales, conduct a thorough root cause analysis to understand underlying issues, such as changes in market trends, customer preferences, and competitive pressures. Revise sales and marketing strategies to target potential growth areas, enhance customer engagement through improved experiences and loyalty programs, and explore diversification of product offerings and entry into new markets to stimulate sales growth and mitigate future declines.

SECONDARY INSIGHTS



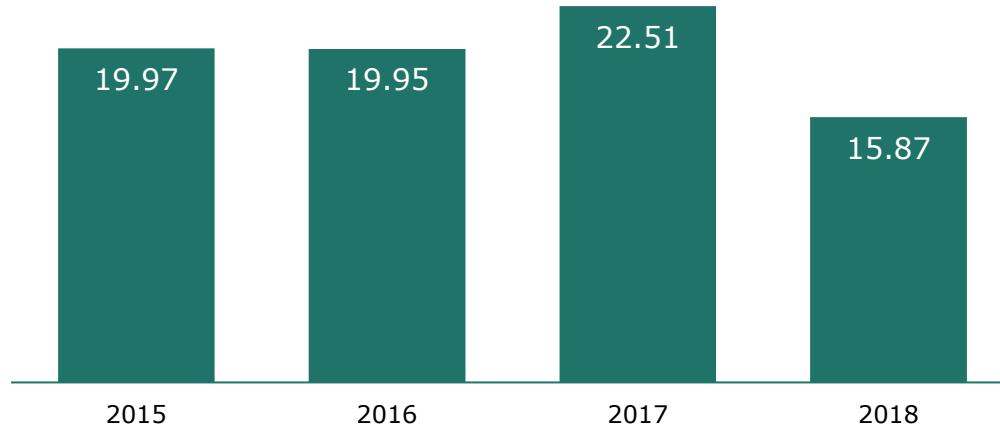
Half of our deliveries are consistently late each year.

Recommendation:

Conduct a detailed analysis to identify the root causes of late deliveries, such as logistical inefficiencies, supply chain disruptions, or inadequate planning. Implement process improvements and technology solutions to enhance delivery scheduling and tracking. Collaborate with logistics partners to ensure timely delivery, and consider revising policies to incentivize on-time performance. Prioritize customer communication to manage expectations and improve satisfaction.

SECONDARY INSIGHTS

What is the yearly average discount trend?



Discount have been consistently declining year over year except for a spike in 2017.

Recommendation:

Analyze the impact of discount strategies on sales and profit margins. Identify reasons for the 2017 spike and leverage effective discount practices from that year. Develop a balanced discount strategy that drives sales without significantly impacting profit margins, considering customer preferences and competitive positioning.

KEY FINDINGS

This analysis provides a comprehensive overview of the company's inventory management, sales performance, and profitability across various dimensions. The key primary insights reveal an inventory value of \$1.59M, total sales of \$33.05M, and 18.97K units in stock. The "small value, large number" product class accounts for the highest stocked items.

Key findings include:

- 1.The "small value, large number" class accounts for the majority of inventory value.
- 2.The consumer segment generates over half of total sales and profit.
- 3.The "high value, small number" class contributes to more than half of the sales.
- 4.Completed orders have the highest sales, customers, quantities, and discounts.
- 5.The standard shipping class dominates in sales and customer volume.
- 6.The corporate segment enjoys higher average discounts compared to other segments.
- 7.Both profit and sales have been declining year-over-year, except for a spike in average discounts in 2017.
- 8.Late deliveries consistently account for half of all shipments across years.

RECOMMENDATIONS

The analysis highlights several key strengths and improvement opportunities for the company's inventory management, sales, and profitability strategies. While the company has achieved commendable sales figures and a diverse product portfolio, declining profits, suboptimal inventory levels, and inefficiencies in logistics and discounting practices require attention. To capitalize on strengths and address areas for improvement, the company should:

1. Optimize inventory levels for the "small value, large number" class based on demand, turnover rates, storage costs, and profitability considerations.
2. Enhance marketing and customer experience strategies for the consumer segment, which drives over half of sales and profits, while exploring growth opportunities in the corporate and home office segments.
3. Reevaluate the discounting strategy across segments to align discounts with order volumes, profitability goals, and customer preferences, addressing the high discounts in the corporate segment.



RECOMMENDATIONS

4. Investigate and address the root causes of declining profits and sales year-over-year through cost control measures, pricing optimization, operational efficiencies, and diversification of product offerings.
5. Streamline order fulfillment processes, address bottlenecks causing pending and on-hold orders, improve communication with customers, and reinforce fraud detection mechanisms.
6. Prioritize on-time deliveries by identifying root causes of consistent delays, implementing process improvements, and collaborating with logistics partners to enhance the standard shipping class performance.
7. Develop a balanced discount strategy that drives sales while maintaining profit margins, considering customer preferences and competitive positioning, leveraging insights from the 2017 spike in average discounts.
8. Focus on maintaining and enhancing the performance of the "high value, small number" class, which contributes significantly to sales, while exploring opportunities in other product classes.



DASHBOARD

Supply Chain
Dashboard

\$1.59M
Inventory Value

18.97k
Total Units in Inventory

118
Inventory Unit

\$33.05M
Total Sales

54
Reorder Unit

Small Value-Large Number
Highest-stocked product class

Order Country

Algeria
Algeria
Algeria
Algeria
Algeria
Algeria
Algeria
Algeria
Algeria
Algeria

Order Region

Canada
Central Asia
Central Africa
Central America
Central Asia
Central Africa
East of USA
East of Asia
East of Europe

Department Name

Apparel
Desk Shop
Disc Shop
Electronics
Food Shop
Games
Health and Beauty
Home Office
Outdoor
Peripherals
Technology

Market

Africa
Europe
Latin America
Pacific Asia
USCA

Class

High Value-Small Number
Medium Value-Medium Number
Small Value-Large Number

Manufacturer

1
1

Year

CASH
DEBIT
PAYMENT
TRANSFER

Order Status

Canceled
Canceled
Complete
Complete
Complete
Complete
Complete
Complete
Complete
Complete

Month

January
February
March
April
May
June
July
August
September
October
November
December

Year

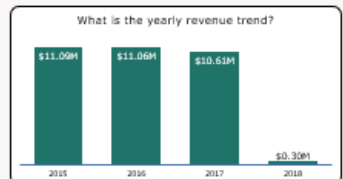
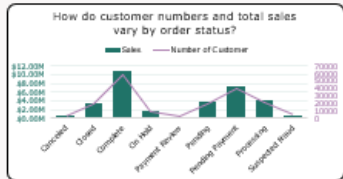
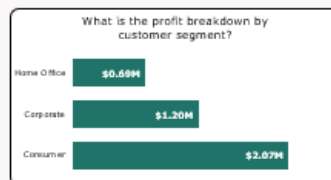
2015
2016
2017
2018

Category Name

Accessories
Accessories
Accessories
Accessories
Accessories
Accessories
Accessories
Accessories
Accessories
Accessories

Shipping Mode

First Class
First Class
First Class
First Class
First Class
First Class
First Class
First Class
First Class
First Class





Thanks!

-Amanat Mahmud



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