CASE STUDY PROJECT

Inventory Analysis and Optimization - Case Study Title: Improving Inventory Efficiency Using Data-Driven Strategies: A Case Study Institution: Sandip University, Madhubani Team Members: Manavi Kumari (Team Leader), Ajay Kumar 1. Background: This case study focuses on optimizing inventory management for a mid-size retail operation using modern tools like Microsoft Excel, Python, and Power Bl. The main goal was to reduce excess stock, avoid shortages, and improve financial efficiency. 2. Objectives: Improve inventory accuracy Reduce overstock and low stock problems Optimize reorder process Increase profitability 3. Tools and Technologies Used: Microsoft Excel: For data cleaning, sorting, and pivot analysis Python: For automation in reorder alerting and data handling Power BI: For visual dashboards and KPI tracking 4. Data Overview: The dataset included: Products, vendors, customers Purchase and sales transactions Data analysis was performed on trends, categories, and price margins 5. Key Findings: 📌 Purchase Analysis:

📌 Sales Analysis:

Monthly purchase patterns were uneven

Some vendors had inconsistent delivery

High purchase quantity in some unnecessary items

rop-selling items identified
Major customers contributed significantly to revenue
Certain products had high demand but low stock
Inventory Status:
Low stock alerts for smartwatches and other fast-moving items
Overstocking found in slow-moving products
over stocking jound in stow moving products
6. Analytical Techniques:
♦ ABC Classification:
Class A: High value (20% items covering 80% value)
Class B: Medium value
Class C: Low value items
Stock Turnover Ratio:
Calculated to check how quickly inventory is sold and replaced
Reorder Level:
Safety stock levels and reorder quantities were determined
Smartwatches needed immediate restocking
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7. Identified Issues:
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Better margin tracking using cost vs selling price

Identified cost-saving opportunities by reducing overstock
Enhanced overall profitability

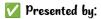
11. Future Enhancements:

Integrate Al-based demand forecasting

Real-time inventory tracking using barcode scanning

12. Conclusion:

This case study demonstrates how data analysis and automation can significantly improve inventory management. With optimized reordering, better vendor management, and real-time insights, the business achieved higher efficiency and customer satisfaction.



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