***Sales and Returns Analysis***

“Data Cleaning with Python & Visualization with Tableau”

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*Overview*

*The objective of this project was to analyze the sales and returns data of the Superstore dataset using Python for data preprocessing and Tableau for visualization. The aim was to uncover key sales trends, regional performance, product-level insights, and the impact of returns on overall sales.*

*Data Preparation*

* *At first, the data was uploaded on Ms-Excel for exploration of dataset and to figure out the work needed to be done for perfect analysis.*
* *The dataset was cleaned in Python:*
  + *Missing values in the* Returned *column were replaced with "No".*
  + Order Date *was formatted to correct date type and broken down into month and year separately.*
  + *Irrelevant or repetitive columns were dropped, etc.*
* *Few visualizations were created in python using matplotlib.*
* *The final dataset was exported and used in Tableau for dashboard creation.*

*Dashboard Overview*

*The dashboard provides a consolidated view of sales performance and returns analysis. It includes the charts and filters.*

## *****Filters:*****

* ***Year Filter (2011–2014):*** *Allows comparison of sales and returns across different years.*
* ***Country Filter:*** *Enables focus on individual country-level sales and profit performance.*

## *****Visualizations Created:*****

* ***Monthly Sales Trend*** *– shows overall sales pattern across months.*
* ***Sales by Region*** *– compares regional performance.*
* ***Sales by Category & Sub-Category*** *– highlights top-performing product categories.*
* ***Profit by Ship Mode / Segment*** *– measures shipping and customer segment efficiency.*
* ***Return Orders Impact*** *– evaluates sales vs. returns to understand losses.*

## *****Monthly Sales Trends*****

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### ***Findings:***

* *Sales are* ***highest in December (~1.6M)****, driven by the holiday season.*
* *Sales dip sharply in* ***February (~0.54M)****, making it the weakest month.*
* *Overall, sales are* ***concentrated in Q4 (Oct–Dec)****, showing strong seasonality.*

### ***Solutions:***

* ***Stock up inventory*** *before November–December to meet demand.*
* *Run* ***festive campaigns*** *and special discounts in Q4.*
* *Launch* ***off-season promotions*** *in February–March (like clearance sales or bundle offers) to reduce sales slumps*.

## *****Regional Performance*****

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### ***Findings:***

* ***Central region (~2.7M)*** *leads in sales, followed by South and North.*
* *Regions like* ***Oceania and Southeast Asia underperform*** *significantly.*

### ***Solutions:***

* *Strengthen* ***distribution networks and supply chains*** *in weak regions.*
* *Conduct* ***regional consumer behavior studies*** *to adapt product mix.*
* *Offer* ***localized discounts and targeted marketing*** *in underperforming markets.*

## *****Product Sub-Category Analysis*****

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### ***Findings:***

* ***Top contributors:*** *Phones, Chairs, and Copiers are the biggest sales drivers.*
* ***Moderate categories:*** *Appliances, Storage, and Machines.*
* ***Low performers:*** *Binders and some office supplies contribute very little.*

### ***Solutions:***

* ***Double down on high-demand categories*** *(Phones, Chairs) with new product launches and bundle offers.*
* *Reposition or repackage* ***low-demand categories*** *like Binders (e.g., bundle with Office Supplies).*
* *Introduce* ***cross-selling strategies*** *(sell Storage with Chairs, Binders with Bookcases).*

## *****Profitability by Country*****

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### ***Findings:***

* *Strong profitability is observed in* ***North America and parts of Europe****.*
* *Other regions contribute sales but have* ***lower profit margins****, likely due to shipping, pricing, or distribution inefficiencies.*

### ***Solutions:***

* ***Audit supply chain costs*** *in low-profit countries.*
* *Revisit* ***pricing models*** *to balance margins with competitiveness.*
* *Adopt* ***localized marketing strategies*** *instead of a one-size-fits-all approach.*

## *****Returned Orders Impact*****

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### ***Findings:***

* *High volume of returns in* ***Technology (~307K)****, followed by* ***Furniture (~264K)*** *and* ***Office Supplies (~248K)****.*
* *Returns are disproportionately higher in Technology compared to its sales share.*
* *Returns negatively affect both* ***revenue and customer trust****.*

### ***Solutions:***

* *Conduct stricter* ***quality checks*** *before dispatch.*
* *Improve* ***product descriptions, images, and customer reviews*** *to set clear expectations.*
* *Offer* ***repair/replacement options*** *for Technology instead of full refunds.*
* *Provide* ***extended warranties or loyalty benefits*** *to retain customers post-return.*

*Conclusion*

*This project highlights how* **Python** and **Tableau** *can be used together to transform raw sales data into meaningful insights.*

*This analysis identifies three core opportunities for Superstore’s growth:*

* ***Seasonality Management:*** *Maximize profits during year end months and smoothen low-season dips through planned promotions.*
* ***Market Expansion & Profitability:*** *Expand presence in underperforming regions while fixing inefficiencies in low-margin countries.*
* ***Return Reduction:*** *Tackle return issues in Technology and Furniture via quality control, clear communication, and better customer support.*

*By implementing these measures, Superstore can* ***increase sales revenue, reduce costs, and improve long-term customer satisfaction.***