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**Improving Raj Fashion: A Data-Driven Approach to  
Sustainable Growth**

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**Mid Term Report for the Business Data Management Capstone  
Project**

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## 1.Executive Summary :

Raj Fashion, a small and medium-sized B2C apparel store in North 24 Parganas, West Bengal, has been struggling with several commercial problems, including falling profit margins, overstocking issues, and slow sales growth as result of rising competition from ecommerce sites. Notwithstanding a strong product range and a loyal customer base, bad inventory control and ineffective sales forecasting have resulted firsthand in unuse stock accumulation and cash flow inefficiency. Sustainability and business expansion depend on a datadriven strategy for sales optimization, better stock management, and increased profit.

90 days of sales and inventory data including product name, customer information, cost price, selling price, quantity sold, stock levels, and transaction dates were gathered to address these difficulties. Surveys and customer feedback were also employed to learn consumerism tendencies and purchase patterns. Quantities such total revenue, profit margins, and stock turnover rates were computed to find patterns and wasted resources. Analytical findings meant to enhance the operational performance of Raj Fashion will be based on this data set.

To monitor sales trends, uncover high and lowperforming goods, and identify overstocking problems, the study used Microsoft Excel features including pivot tables, vlookup, and visual data (charts and graphs). Early findings suggest that price changes and stock realignment could materially help corporate performance. Deeper trend analysis, demand prediction, and precisely marketing techniques aimed at maximizing sales and customer retention will be future steps. Raj Fashion will be able to sustain its business growth and enhance financial results by using data analysis.

## 2.Proof of Originality of Data:

You can find the supporting evidence verifying the originality and authenticity of the datasets used in the Business Data Management project through the following link.

<https://drive.google.com/drive/folders/1JPh156AtP5BDBA9BGbeAlGde0RXrxtJN?usp=sharing>

In proof of originality there are-

- Letter from organization.
- Images of the store.
- A short video interacting with the Shop Owner.

### 3.Metadata and Descriptive Statistics:

**3.1. Metadata :** Metadata refers to data about the collected data, providing detailed insights into the variables used for analysis. It ensures a structured approach to understanding the dataset, its relevance to the problem statement, and how it aids in decision-making for Raj Fashion's business optimization.

**Data Link:**

[https://docs.google.com/spreadsheets/d/1ds790fk7LMaaKEQ\\_y5IwqQoNVySb\\_rN\\_1AF-mgUH17M/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1ds790fk7LMaaKEQ_y5IwqQoNVySb_rN_1AF-mgUH17M/edit?usp=sharing)

- **Information about Data :**

- **Date:** The dataset spans from October 1, 2024, to December 29, 2024, capturing daily transactions. This is crucial for identifying sales trends and seasonality.
- **Total Rows & Columns:** The dataset consists of 500 rows and 6 columns, providing a comprehensive view of sales and inventory performance with 9 rows and 4 columns.
- **Product Name:** The store primarily sells apparel items such as shirts, trousers, jeans, ethnic wear, formal wear, undergarments, footwear, and accessories. The most sold product during the period was Accessories.
- **Customer Name:** This variable helps track purchase frequency, allowing identification of repeat customers and customer preferences.
- **Cost Price & Sell Price:** These are essential for profit margin calculations and assessing pricing strategy effectiveness.

- **Quantity Sold:** Indicates sales volume per product, which is necessary for demand forecasting and stock replenishment.
- **Inventory Levels:** Inventory data was not fully recorded or missing in the dataset, making it difficult to assess overstocking or understocking issues directly.
- **Total Revenue:** Captures daily revenue generated for each product.

Date	Product Name	Customer Name	Cost Price	Sell Price	Quantity
2024-10-01	Trousers	Vikas Mehta	250	599	1
2024-10-01	Shirt	Anita Roy	1222	1406	4
2024-10-01	Ethnic Wear	Suman Das	942	1093	5
2024-10-01	Footwear	Arun Kumar	1252	1628	2
2024-10-01	Accessories	Rajesh Gupta	370	839	1
2024-10-01	Ethnic Wear	Arun Kumar	1199	1493	3
2024-10-02	Shirt	Vikas Mehta	280	709	1
2024-10-02	Jeans	Suman Das	788	1123	2
2024-10-02	Accessories	Priya Sen	1459	1554	4
2024-10-02	Shirt	Anita Roy	664	1110	2

Table 1: Structure of table/data

Month wise product inventory			
Product Name	December	November	October
Accessories	100	100	100
Ethnic Wear	100	100	100
Footwear	100	100	100
Formal Wear	100	100	100
Jeans	100	100	100
Shirt	100	100	100
Trousers	100	100	100
Underwear	100	100	100

Table 2: Structure of table/data

Date	Month	Product Name	Customer Name	Cost Price	Sell Price	Quantity	Profit per Unit	Total Revenue	Total Cost	Total Profit
1-Oct-2024	October	Trousers	Vikas Mehta	250	599	1	349	599	250	349
1-Oct-2024	October	Shirt	Anita Roy	1222	1406	4	184	5624	4888	736
1-Oct-2024	October	Ethnic Wear	Suman Das	942	1093	5	151	5465	4710	755
1-Oct-2024	October	Footwear	Arun Kumar	1252	1628	2	376	3256	2504	752
1-Oct-2024	October	Accessories	Rajesh Gupta	370	839	1	469	839	370	469
1-Oct-2024	October	Ethnic Wear	Arun Kumar	1199	1493	3	294	4479	3597	882
2-Oct-2024	October	Shirt	Vikas Mehta	280	709	1	429	709	280	429
2-Oct-2024	October	Jeans	Suman Das	788	1123	2	335	2246	1576	670
2-Oct-2024	October	Accessories	Priya Sen	1459	1554	4	95	6216	5836	380
2-Oct-2024	October	Shirt	Anita Roy	664	1110	2	446	2220	1328	892

Table 3: Structure of table/data with Revenue

Each of these variables plays a critical role in addressing Raj Fashion's business challenges. Sales trends (date, quantity sold) help improve forecasting, while profit margins (cost price, sell price) provide insights into financial performance. Inventory levels assist in stock optimization, and customer purchase behavior supports targeted sales strategies. By analyzing these variables, Raj Fashion can minimize overstocking, enhance pricing strategies, and improve overall profitability.

**3.2. Descriptive Statistics :** Key descriptive data for important variables were calculated to evaluate Raj Fashion's sales results.

- **Total Sales Value:** Reflects the aggregate revenue produced.
- **Mean & Median Sales Every Day:** Helps to grasp the average marketplace performance.
- **Mode (for most sold product):** Identifies the item most commonly bought.
- **Standard Deviation (Sales & Inventory):** Measures fluctuations in product need and inventory levels.
- **Profit Margin Distribution:** This study of profitability among varied goods classes.

Final Summary of Key Statistics for Raj Fashion			
Category	Metric	Value	Explanation
Sales	Total Sales (All Products)	1644024	Sum of all product sales.
Sales	Average Daily Sales	18266.93333	Mean sales per day.
Sales	Median Daily Sales	1116	Central sales tendency
Sales	Standard Deviation (Sales)	393.676557	Indicates sales fluctuations
Sales	Highest Sales Day	5-Dec-2024	Peak sales day based on transaction volume.
Sales	Lowest Sales Day	8-Oct-2024	Day with the lowest sales recorded.
Revenue	Total Revenue	1644024	Total income from sales.
Revenue	Average Daily Revenue	3288.048	Mean revenue per day.
Revenue	Median Sales	2956	Central tendency measure.
Revenue	Standard Deviation (Sales)	1999.075866	Measures fluctuations in revenue.
Sales	Most Sold Product	Footwear	Most frequently sold item.
Profit	Total Profit Earned	393810	Total profit across all products.
Profit	Average Daily Profit	787.62	Mean daily profit.
Profit	Highest Profit Day	27-Nov-2024	Most profitable day.
Profit	Lowest Profit Day	29-Oct-2024	Least profitable day.
Profit	Average Profit Margin (%)	23.95%	Percentage of revenue retained as profit.
Inventory	Average Stock Level	300	Mean inventory available.
Inventory	Stock Variability	60.96%	Stock Variability
Inventory	Stock Turnover Rate	56.20%	Percentage of stock sold vs. inventory level.
Customer Borrowing	Total Outstanding Amount	1644024	Total unpaid customer debt.
Customer Borrowing	Average Borrowed Per Customer	164402.4	Mean outstanding balance per customer.

Table 4: Summary of Key Statistics

These statistics provide quantitative insights into Raj Fashion’s operational challenges. High sales variability indicates fluctuating demand, while profit margin analysis highlights pricing inefficiencies. Inventory fluctuations signal the need for better stock management, and top-selling product identification supports better purchasing decisions. These findings directly address the problem statements, guiding Raj Fashion in making data-driven decisions to enhance profitability, optimize stock, and improve customer engagement.

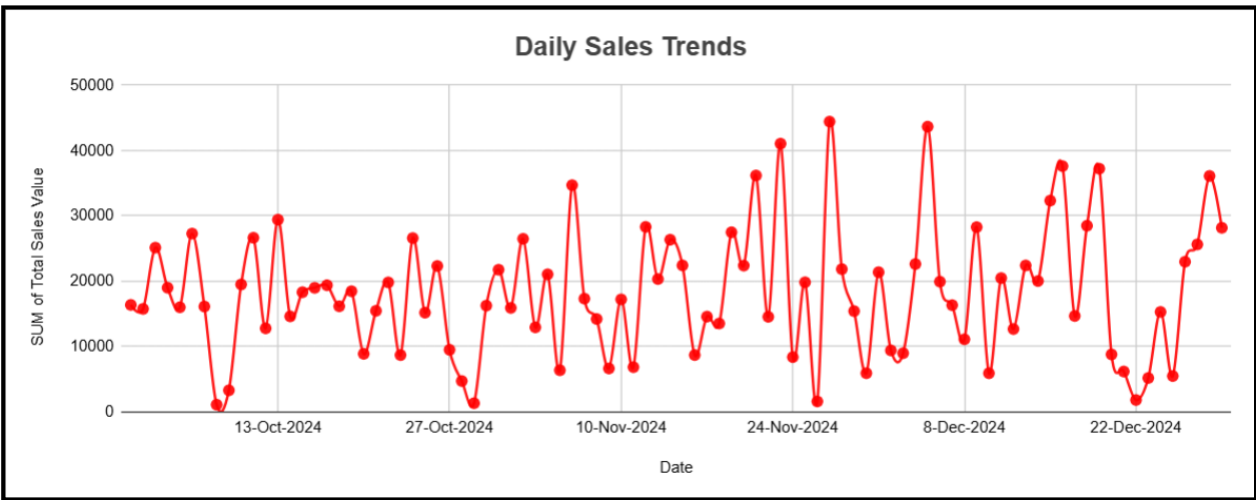
4. Detailed Explanation of Analysis Process/Method:

Raj Fashion used data to refine pricing, optimize stock, and personalize marketing. This boosted profits, reduced waste, and ensured smarter growth.

**Data Collection and Processing:** The data for Raj Fashion was collected over 90 days, covering sales, inventory, pricing, and customer purchases. After gathering the data, it was cleaned by removing duplicates and structuring it into monthly segments for better analysis. Key calculations like profit margins, stock turnover, and top-selling products were performed to uncover trends. This helped Raj Fashion improve pricing, manage inventory efficiently, and better understand customer behavior.

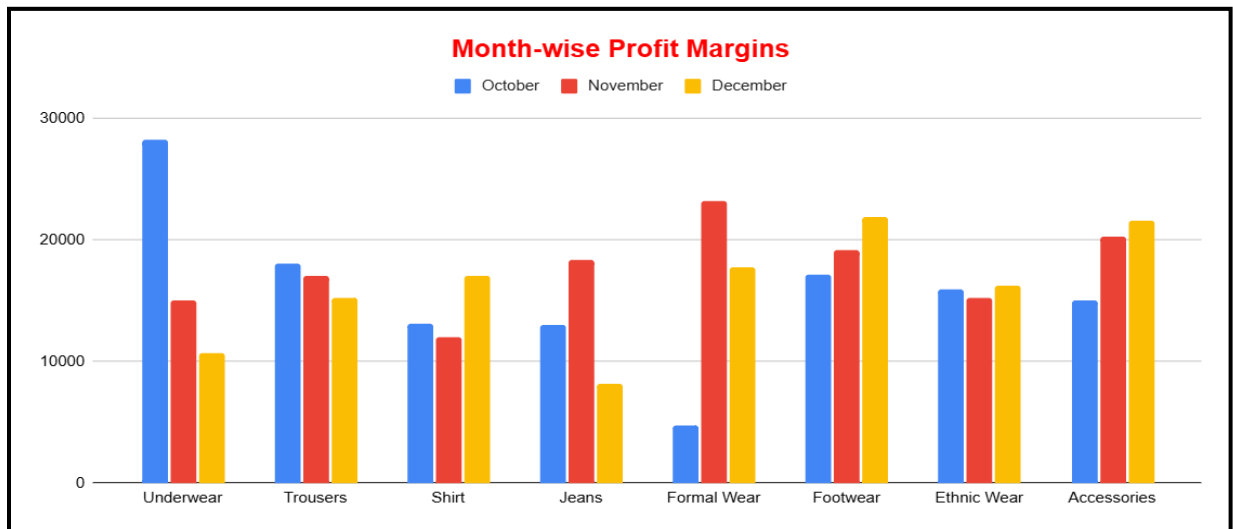
4.1. Sales Trend Analysis :

- Total sales were examined to note high and low performance days and track sales trends over time and it’s mentioned in **calculative part 1** sheet.
- A pivot table was made to show productwise, daily, and monthly sales. This assisted in identifying which times had the worst and most outstanding sales.



## 4.2 Monthly Profit Margin Analysis :

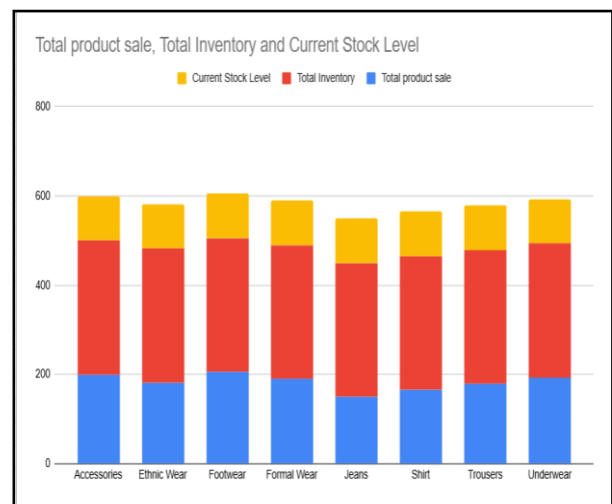
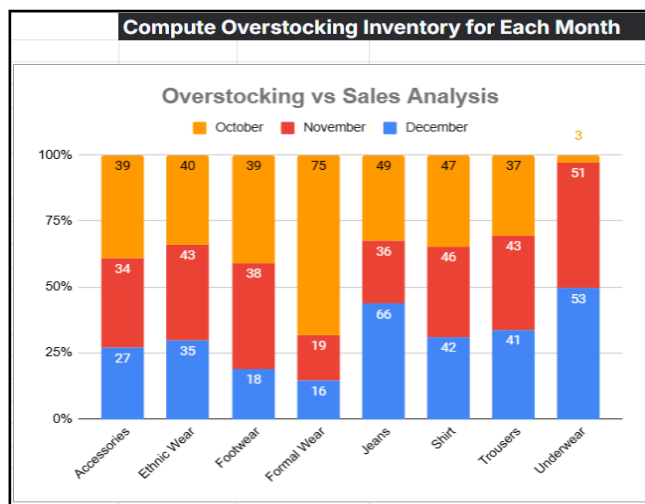
- By reviewing profit margins month by month, Raj Fashion could spot seasonal ups and downs, helping them identify the most and least profitable periods.
- Breaking it down monthly showed which months boosted profits the most and which needed adjustments in pricing or costs.
- The analysis also revealed how discounts, promotions, and inventory costs impacted earnings, making financial planning smarter.
- With these insights, Raj Fashion can now make data-backed decisions—optimizing stock, adjusting prices, and boosting profits all year.



## 4.3 Smart Inventory Management for Better Stock Turnover:

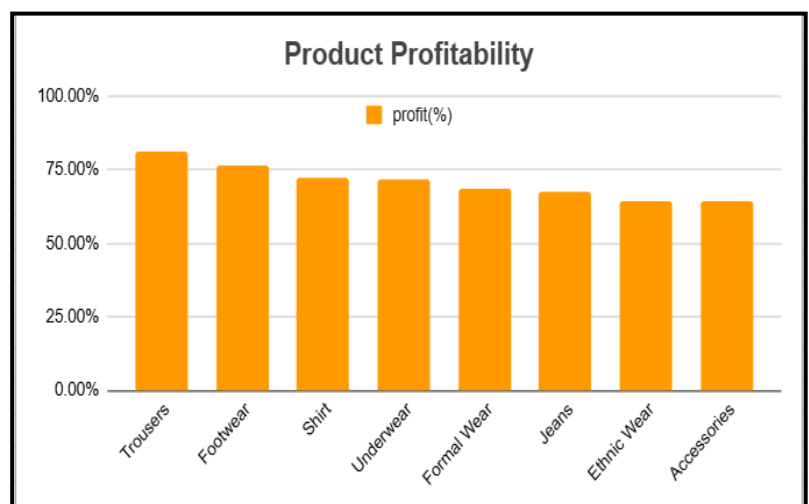
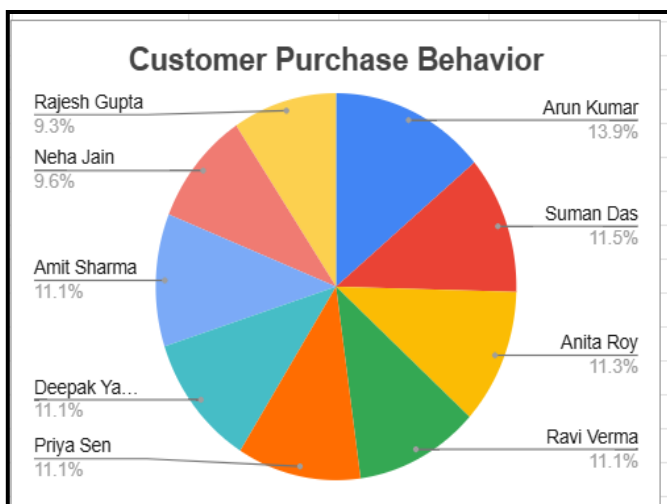
- We calculated overstocked items in the **calculative part 2** sheet to see where excess stock was piling up.
- Sales increase during Durga Puja and winter, temporarily reducing overstock, but demand drops later, leading to excess inventory.
- Evaluates stock efficiency, guiding smarter inventory forecasting, and helps Raj Fashion optimize stock purchases, reduce overstock, and improve stock turnover.





#### 4.4 Customer & Product Sales Analysis :

- Conducted in the **calculative part 3** sheet to identify top customers and best-selling products.
- To identify loyal, highvalue consumers, we looked at total spending and consumer purchase frequency.
- Insights helped Raj Fashion launched focused promotions and personalized offers to increase repeat customers.
- By looking at sales statistics to identify the most popular items, ensuring better stock planning and Prioritized reloading of quickmoving products to avoid shortages.



## **5. Results and Findings :**

Raj Fashion's inventory, sales, and financial review provided important consumer perceptions that would help to enhance sales approach, stock management, and profitability.

### **5.1 Sales and inventory trends:**

- Reducing overstock problems, sales shot up quite during celebratory times like Durga Puja and Bhai Dooj. Postfestival sales fell, causing overstock, especially in suits, formal wear, and pants.
- The salestoinventory ratio showed varying stock usage, underlining the need of improved demand forecast.

### **5.2 Profitability and Revenue Analysis:**

- The monthwise profit margin study highlighted pricing discrepancies, which point to a requirement for tactical changes.
- While some lowmargin items had strong sales but little profitability, highmargin goods made a significant contribution to total profits. Actually Seasonal cost fluctuations impacted overall margins, emphasizing the importance of dynamic pricing strategies.

### **5.3 Customer Buying Patterns:**

- Analysis of repeat consumers revealed a trend of regular buys in ethnic garments and accessories, therefore showing loyal segments of buyers.
- Highvalue customers' recognition allowed Raj Fashion to launch focused offers and personalized discounts.

### **5.4 Inventory Efficiency & Overstock Management:**

- The overstocking vs. sales analysis showed a need for better stock turnover planning. Although their stock levels were high, some goods moved slowly, therefore raising holding costs.
- Stock optimization measures, such as aligning purchases with demand trends, were recommended to prevent future overstocking issues.

Using these ideas, Raj Fashion can improve customer engagement, adjust pricing plans, and manage inventory to increase profits.