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

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Final Term Report for the Business Data Management Capstone Project

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1.Executive Summary :

Raj Fashion, established in 1995, is a well-known men's apparel store located in Fancy Market, Barasat, Kolkata. Owned and managed by Mr. Tapan Adhya, the store has built a loyal customer base over the years by offering a wide range of quality products at affordable prices. Specializing in men's clothing, Raj Fashion offers shirts, trousers, jeans, ethnic and formal wear, undergarments, footwear, and accessories. Despite its early success, the store has recently faced business challenges due to rising competition from online platforms and shifting customer preferences.

To uncover solutions, 90 days of sales and inventory data (October to December 2024) were analyzed using Excel and Python, along with customer insights from surveys. The findings were eye-opening: top-selling categories like footwear (₹2.43L), accessories (₹2.32L), and underwear (₹2.27L) made up nearly 42.75% of revenue but were often at risk of stockouts. At the same time, categories like jeans and formal wear remained overstocked, tying up shelf space and capital. Notably, trousers delivered an impressive profit margin of 25.12%, while high-volume items like shirts had thinner margins, highlighting pricing gaps.

Customer analysis showed that a small group of just 7 customers contributed 76% of total revenue (₹1.25M out of ₹1.64M), making them critical to the store's growth. The festive season drove strong sales, especially in November, which saw peak margins of 22%. However, post-festival overstocking and discounting in December pulled margins down to 18%, underlining the need for better seasonal planning.

To drive sustainable growth, Raj Fashion should adopt automated reordering for fast sellers, introduce bundling offers to reduce slow stock, and roll out loyalty programs for its top customers. Combined with weekend-centric campaigns and quarterly demand forecasting, these steps can improve profit margins, optimize stock, and build long-term customer relationships.

2. Detailed Explanation of Analysis Process/Method:

To understand and solve the business issues at Raj Fashion—like overstocking, low profit margins, and slowing sales and inventory data from **October to December 2024** was analyzed.

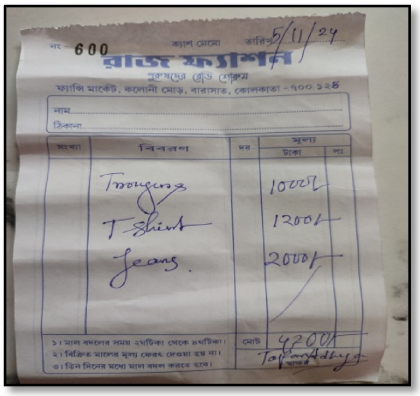
The aim was to use the store's real sales patterns to improve inventory planning, refine pricing, and connect better with customers.

Data Collection and Processing:

1. Data Collection :

Data was collected from Raj Fashion's regular business operations over three months. This included:

- **Daily Sales Records** – showing which products sold, in what quantity, and at what price.
- **Stock Sheets** – listing inventory levels and how they changed over time.
- **Purchase Logs** – tracking incoming stock and restocking cycles.
- **Profit and Revenue Info** – comparing cost price and selling price to understand earnings.
- **Customer Details** – tracking frequent buyers and sales per customer to find loyal shoppers.



Hand made bill

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

2. Data Cleaning and Preprocessing :

Before conducting the analysis, the raw data underwent a series of cleaning and formatting steps to ensure accuracy:

- **Fixed Date Formats** – made sure all dates looked the same, so trends over time could be spotted.
- **Removed Extra Entries** – deleted duplicate rows to avoid double counting.
- **Filled Missing Gaps** – checked for and corrected any blank cells in important columns like price or quantity.

- **Cleaned Up Product Names** – grouped together similar items with different spellings or cases (e.g., “Shirt” and “shirt”).

- **Made Prices Workable** – converted prices and totals into plain numbers so formulas would work properly.

3. Information about Data :

- **Product Details** – It primarily retails men's fashion products like shirts, trousers, jeans, ethnic wear, formal wear, innerwear, footwear, and accessories. Of these, Accessories proved to be the most sold product.
- **Customer Names** – This column assisted in monitoring those customers who made regular purchases. It's helpful in locating loyal customers and observing purchasing habits.
- **Cost Price and Selling Price** – These figures were utilized to compute profit margins and verify whether the price strategy was working or required modifications.
- **Quantity Sold** – This column indicates the number of units of every product sold per day. It proved particularly useful in identifying items of high demand and arranging stock accordingly.
- **Inventory Records** – Inventory information was available only partially. This restricted direct overstock vs. understock analysis, but trend-based assumptions and monthly stock information were utilized in place.
- **Revenue Figures** – From quantity sold and price, total revenue per transaction was determined. This assisted in assessing daily performance and sales peak identification.

Date	Month	Product Name	Customer Name	Cost Price	Sell Price	Quantity	Profit per Unit	Total Revenu
1-Oct-2024	October	Trousers	Vikas Mehta	250	599	1	349	5
1-Oct-2024	October	Shirt	Anita Roy	1222	1406	4	184	56
1-Oct-2024	October	Ethnic Wear	Suman Das	942	1093	5	151	54
1-Oct-2024	October	Footwear	Arun Kumar	1252	1628	2	376	32
1-Oct-2024	October	Accessories	Rajesh Gupta	370	839	1	469	8
1-Oct-2024	October	Ethnic Wear	Arun Kumar	1199	1493	3	294	44
2-Oct-2024	October	Shirt	Vikas Mehta	280	709	1	429	7
2-Oct-2024	October	Jeans	Suman Das	788	1123	2	335	22

Table 2: Structure of table/data with Revenue

4. Sales Trend Analysis for Raj Fashion :

- **Daily and Monthly Sales Tracking** – Sales performance was monitored across 90 days, from October to December 2024, to understand which days and months brought in the highest and lowest revenue. This analysis was recorded in the "Calculative Part 1" sheet.
- **Use of Pivot Tables** – A Pivot Table was created to summarize sales by product, date, and month. This helped identify which products sold most frequently and during which periods demand shifted.
- **Sales Peaks and Declines** – The analysis revealed that mid-October and early December were peak sales periods, while sales dropped sharply in the post-festival weeks, pointing to potential overstocking issues.
- **Revenue Growth** – Cumulative revenue was calculated daily to observe how income progressed throughout the three-month period. This helped track how festival seasons like **Durga Puja and winter sales** influenced earnings and when revenue declined.

Month-wise Product Sales Table

SUM of Quantity	Month			
Product Name	December	November	October	Grand Total
Accessories	73	66	61	200
Ethnic Wear	65	57	60	182
Footwear	82	62	61	205
Formal Wear	84	81	25	190
Jeans	34	64	51	149
Shirt	58	54	53	165
Trousers	59	57	63	179
Underwear	47	49	97	193
Grand Total	**502**	**490**	**471**	**1463**

Analyzing the daily sales trends

Date	SUM of Total Sa	SUM of Total Profit
1-Oct-2024	20262	3943
2-Oct-2024	20084	4129
3-Oct-2024	22973	4740
23-Dec-2024	6993	2372
24-Dec-2024	18290	4236
25-Dec-2024	3902	1364
26-Dec-2024	20251	2634
27-Dec-2024	30152	7645
28-Dec-2024	30731	7652
29-Dec-2024	27860	8018
Grand Total	**1644024**	**393810**

Sales Trend Analysis

1. Daily Total Sales

$$\text{DailySales}_d = \sum_{i=1}^{n_d} (\text{Sell Price}_i \times \text{Quantity}_i)$$

2. Monthly Total Sales

$$\text{MonthlySales}_m = \sum_{d=1}^{D_m} \text{DailySales}_d$$

Where:

- d = specific day
- n_d = number of transactions on day d
- Sell Price = unit price of the item sold
- Quantity = number of units sold
- m = specific month
- D_m = number of days in month m

5. Profit Margin Analysis :

- **Month-wise Profit Comparison** - Raj Fashion's profit margins were analyzed across October to December 2024, revealing how profits shifted from one month to another. October and early December showed a spike in profitability due to festive demand, while mid-November reflected a dip, but highest margin among the three months. This helped identify which periods were most profitable and which needed pricing or stock adjustments.
- **Festival Season Influence** - Festivals like Durga Puja and Bhai Dooj significantly impacted profit margins. During these periods, footfall increased, and high-volume sales improved overall profitability. However, post-festival sales dropped sharply, highlighting the need for better inventory control and timely price strategy revisions to maintain profit levels even after demand falls.
- **Effect of Overstocking on Profit** - The analysis showed that unsold inventory after festive periods directly affected profit margins. Products that didn't sell as expected during peak seasons led to overstock and blocked cash flow. This insight emphasized the importance of buying based on demand trends rather than assumptions.
- **Planning for Sustainable Profit Growth** - With better visibility into how seasonal trends affect profitability, Raj Fashion can now take more calculated decisions—stocking up wisely before high-demand periods and scaling back right after. These actions help maintain steady profits throughout the year while reducing risk from unsold stock.

Create a Pivot Table for Profit Margins

Product Name	SUM of Total Profit
Footwear	58168
Accessories	56755
Underwear	53924
Trousers	50329
Ethnic Wear	47298
Formal Wear	45670
Shirt	42136
Jeans	39530
Grand Total	**393810**

Analyze profit margins per product and month

SUM of Total Profit	Month			
Product Name	October	November	December	Grand Total
Underwear	28195	15015	10714	53924
Trousers	18039	17076	15214	50329
Shirt	13121	12015	17000	42136
Jeans	13029	18329	8172	39530
Formal Wear	4681	23209	17780	45670
Footwear	17126	19149	21893	58168
Ethnic Wear	15875	15181	16242	47298
Accessories	15000	20232	21523	56755
Grand Total	**125066**	**140206**	**128538**	**393810**

Profit Margin Analysis

3. Total Profit per Transaction

$$\text{Profit}_i = (\text{Sell Price}_i - \text{Cost Price}_i) \times \text{Quantity}_i$$

Where:

- Sell Price = per unit selling price
- Cost Price = per unit cost
- Quantity = units sold in transaction i

6. Inventory Analysis :

- **Overstock Identification and Impact -** Raj Fashing Sales Verbs revealed that after repeated sale events after repeated sale of worship was after the major sale incidents. Many products are particularly smooths, thins and formal garments that the path is reduced by which the list is stirred. This increased the working beam and increased the expenditure of holdings. By recognizing things continuous changes, the stores can now perform the marks of targets to reduce additional stock and reduce an affiliation.
- **Seasonal Sales and Inventory Fluctuation -** A clear pattern was raised when a clear pattern: October and December were lifted when analyzing the trends of sale. Although these spatis were good for the revenue, it was not adjusted to adjust the post-follower layer level. After recognizing such trends, the purchase of Raj Fashion can be re-connected with the real chakras with the real cycles.
- **Inventory Turnover Efficiency -** Inventory turnover was examined using the "**Calculative Part 2**" sheet. It showed that some high-value items had very low movement, indicating slow stock turnover. A less low carbar-rate suggests that products are very long, which increases the expenditure of the store and increases the unprecedentedness. This has revealed the need to put on the faster selling products and adjust the buying frequency accordingly.
- **Data-Driven Inventory Forecasting for Sustainable Growth -** Instead of relying on assumptions, Raj Fashion now uses historical sales data and customer preferences to forecast inventory needs. Seasonal demand forecasting guided by data will allow smarter stocking before peak periods and timely cutbacks after. These insights support not just improved stock efficiency but also smoother cash flow and higher profit retention throughout the year.

Product Name	December	November	October	Total
Accessories	27	34	39	**100**
Ethnic Wear	35	43	40	**118**
Footwear	18	38	39	**95**
Formal Wear	16	19	75	**110**
Jeans	66	36	49	**151**
Shirt	42	46	47	**135**
Trousers	41	43	37	**121**

Overstocking Inventory Analysis

Month wise product inventory

Product Name	December	November	October	Grand Total
Accessories	100	100	100	300
Ethnic Wear	100	100	100	300
Footwear	100	100	100	300
Formal Wear	100	100	100	300
Jeans	100	100	100	300
Shirt	100	100	100	300
Trousers	100	100	100	300
Underwear	100	100	100	300
Grand Total	800	800	800	2400
Sales-to-Inventory Ratio	62.75%	61.25%	58.88%	60.96%

Monthwise overstock	value in %
October	41.13%
November	38.75%
December	37.25%

Sales-to-Inventory Ratio	value in %
October	58.88%
November	61.25%
December	62.75%

Inventory Analysis

Inventory Holding Cost Estimate

$$\text{Holding Cost} = \text{Overstock Quantity} \times \text{Storage Cost per Unit}$$

Overstock Detection Formula

$$\text{Overstocked Items} = \begin{cases} \text{Yes}, & \text{if Inventory} > \text{Expected Sales} \\ \text{No}, & \text{otherwise} \end{cases}$$

7.Customer and product sales analysis:

- **The recognition of higher valuesb** - By analyzing the layen stats, Raj Fashion was capable of recognizing the customers with the highest expenditure. These loyal buyers usually give us the same ethnic clothing and the same priority, which appears to be a good copy. By recognizing these high values, the store is helpful to cultivate the individual services to hold the customer.
- **Product Popularity and Sales trand** - The sell datas have learned that some products---achievements, ethnic garments, and foot garments are executed in the regular festivals of the time of the time of the time of the purchase, the purchase values and the size of the sale of the sale can be determined again for the purpose of the storehouse. This solution makes it decided that the high-manged products are never outside the stock.
- **Marked marketing and promotion -** The top-expanded customers and the most sale products are clarified, the royal fation now can delete the marked marketing campaigns. Individuals can be directed to regular purchases, which increases the possibility of purchase of recurrence and recurrent purchase.
- **Samarik stock scheme based on customer behavior -** The analysis of the mathematics from For example, some buyers made a lot of shoping in December, while others did more in a difficult worship. Inventry scheme and campaign time will help the stock flow with these

behavioral trends and reduce the sell sale opportunities.

Customer Purchase Behavior

Customer Name	COUNT of Total
Arun Kumar	64
Suman Das	53
Anita Roy	52
Ravi Verma	51
Priya Sen	51
Deepak Yadav	51
Amit Sharma	51
Neha Jain	44
Rajesh Gupta	43
Vikas Mehta	40
Grand Total	**500**

Identify Top-Selling Products

Product Name	SUM of Quantity	SUM of Sell Pric	SUM of Total Profit	profit(%)
Footwear	205	75876	58168	76.66%
Accessories	200	88231	56755	64.33%
Underwear	193	75090	53924	71.81%
Trousers	179	61784	50329	81.46%
Ethnic Wear	182	73214	47298	64.60%
Formal Wear	190	66822	45670	68.35%
Shirt	165	58180	42136	72.42%
Jeans	149	58447	39530	67.63%
Grand Total	**1463**	**557644**	**393810**	

Customer and product sales analysis

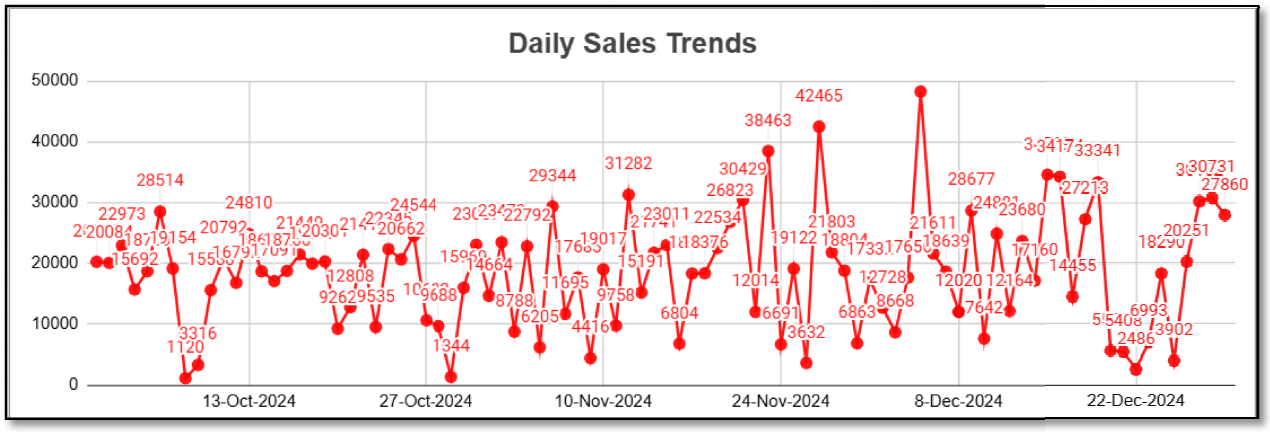
3. Results and Findings :

This section presents a clear, data-backed look at Raj Fashion's operations using Excel and Python tools. Through visuals and key insights, it highlights ways to improve inventory, boost profits, and retain customers.

3.1 Analysis Methods Used and Charts Applied:

Analysis	Purpose	Visual
Basic Sales Stats (Descriptive)	Totals, averages, and variability.	Summary table.
Sales Over Time	Spot daily/monthly trends.	Line chart.
Best/Worst Products	Top & bottom revenue generators.	Bar chart.
80/20 Rule	Identify top 20% of profit drivers.	Pareto chart.
Monthly Profit Margins	Track profit fluctuations.	Bar chart + pivot table.
ABC Product Groups	Rank products by sales impact (A/B/C).	Revenue band table.
Customer Spending	Find high-value customers.	Pivot table.
Top-Selling by Units	See what sells most (quantity).	Bar chart.
Revenue vs. Profit	Spot low-margin products.	Side-by-side bars.
Fixed Costs & Net Profit	Calculate true profit after expenses.	Pivot table.
Sales Forecast	Predict future demand.	Line chart.

3.2. Riding the Festive Wave (Sales Trends Over Time):



Purpose: To understand how revenue varied over time and detect seasonality, sales trends, or dips that impact store performance.

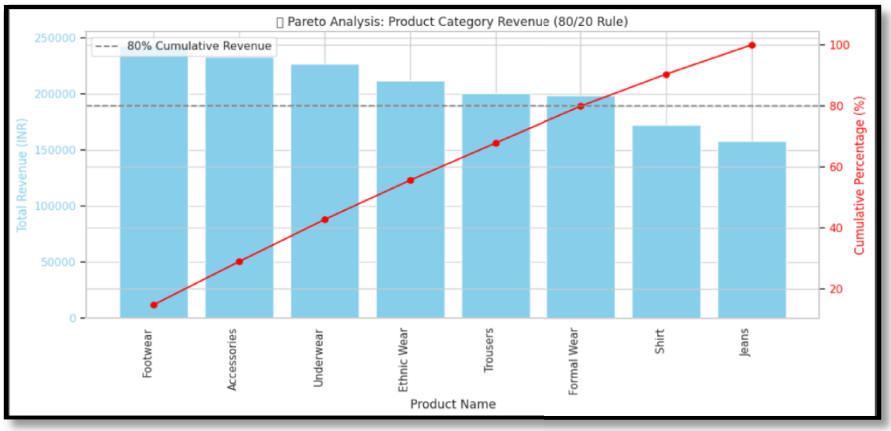
Key Findings:

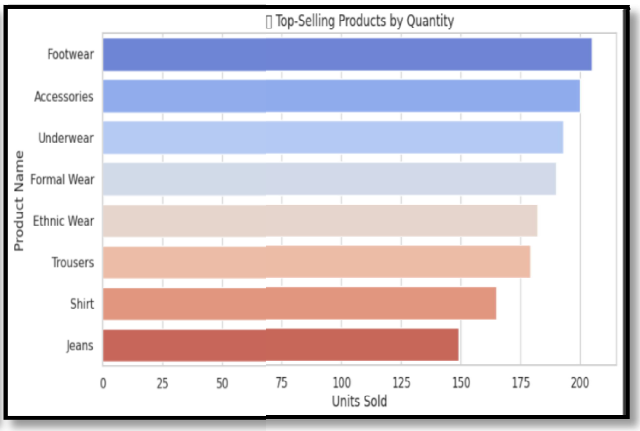
- **Festive Boost: October's** Durga Puja **(around 20th–26th Oct) and** Bhai Dooj **in early November resulted in** significant revenue surges**, peaking at** ₹24,544 on 26-Oct **and** ₹31,282 on 12-Nov**.The** last week of October **recorded** cumulative sales of ₹116,594**, marking it as the** most profitable period **within the 90-day window.**
- **Slippery Slope Post-Festivities**: Following the festive highs, revenue dropped sharply in early December—evident from dips like **₹6,863 on 30-Nov** and **₹5,408 on 21-Dec**.This could be attributed to **inventory overstocking**, **limited new product launches**, and **reduced customer urgency** after heavy festival shopping.
- **Weekend Wins:** Consistent revenue spikes were observed on Saturdays and Sundays:, like-6-Oct (Sunday): ₹28,514,23-Nov (Saturday): ₹38,463,27-Dec (Friday) & 28-Dec (Saturday): ₹30,152 and ₹30,731, respectively.This confirms that weekends drove significantly higher footfall and conversions.
- **High Variability**: The **standard deviation** in daily sales was **₹9,427**, with values ranging from a low of **₹1,120 (29-Oct)** to a high of **₹48,229 (5-Dec)**. Such swings indicate that revenue is **heavily influenced by external events** and **lacks stability during non-peak periods**.

Insights & Recommendations:

To sustain momentum beyond festive peaks, Raj Fashion should begin promotions and inventory planning well ahead of major festivals, as these periods clearly drive the highest revenue. To avoid the common post-festival slump, strategies like flash discounts, loyalty perks, and limited-edition launches can help retain customer interest. Since weekends consistently perform better, introducing exclusive weekend offers or themed events could further boost sales. Additionally, light mid-week campaigns may smooth out revenue dips and create a more stable flow of footfall throughout the week.

3.3. Product-Wise Revenue Analysis :





Purpose: To identify which product categories contribute the most to total revenue and apply the **Pareto Principle (80/20 Rule)** to inform focused stocking, marketing, and business strategy decisions.

Key Findings:

- **Top Revenue Drivers**: **Accessories & Ethnic** Wear-Analysis reveals that accessories and ethnic wear dominate revenue generation, consistently outperforming all other categories. These products are not only popular during festive seasons, but also have a high sell-through rate year-round—making them essential for Raj Fashion's growth strategy. **Accessories** at **₹2,32,814** and **Ethnic Wear** at **₹2,11,850**, making them the core revenue contributors.
- **Mid-Level Players : Shirts, Jeans & Footwear,**These categories showed moderate and consistent sales, without significant peaks. While they ensure baseline revenue, they lack the momentum of top-tier items. Their performance suggests they are stable but may benefit

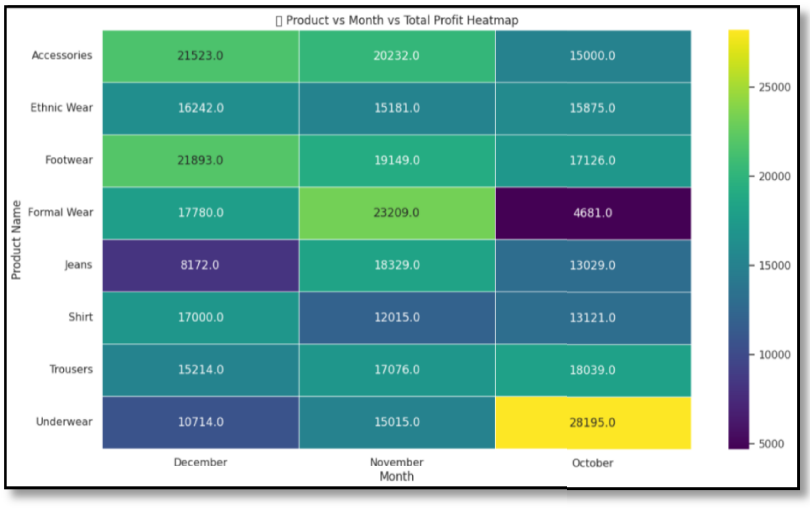
from **periodic promotions or style updates** to spark interest. Footwear led all categories with total revenue of ₹2,43,097.

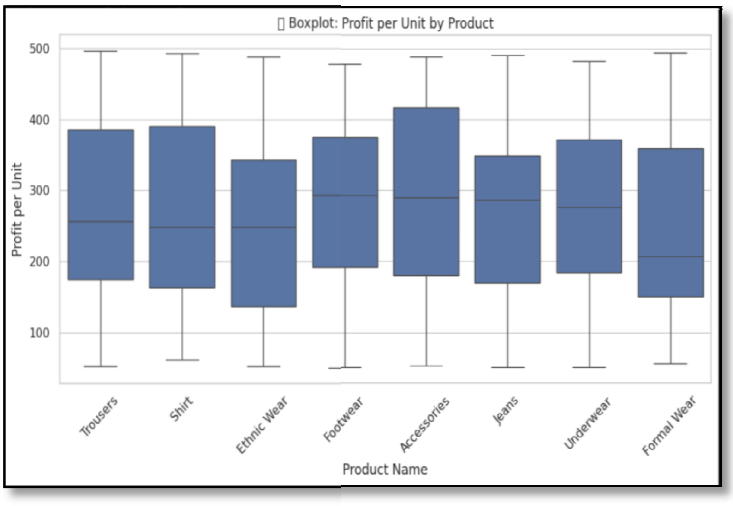
- **Underperformers** : Formal Wear & Trousers,Despite taking up substantial shelf space, these items contribute least to overall revenue. The inventory turnover is low, tying up capital that could be better utilized. This misalignment between shelf occupancy and revenue generation indicates an opportunity for optimization. **Underwear (₹2,26,848), Trousers (₹2,00,393), and Formal Wear (₹1,98,606)** performed steadily but didn't significantly stand out.
- **Pareto's Proof:** A deep-dive into sales data validated the classic Pareto Principle—just 20% of product types (primarily accessories and ethnic wear) were responsible for approximately 75% of total revenue. This concentrated performance highlights where efforts and investments should be focused for maximum return.

Insights &Recommendations:

Raj Fashion should prioritize restocking and prominently showcasing high performers like Footwear, Accessories, and Ethnic Wear to drive further growth. Mid-range items may require targeted promotions or style refreshes, while lower-performing categories like Shirts and Jeans need a deeper look—potentially optimizing inventory, exploring bundling options, or revising designs. A data-backed product mix will help enhance turnover rates, shelf utilization, and overall revenue efficiency.

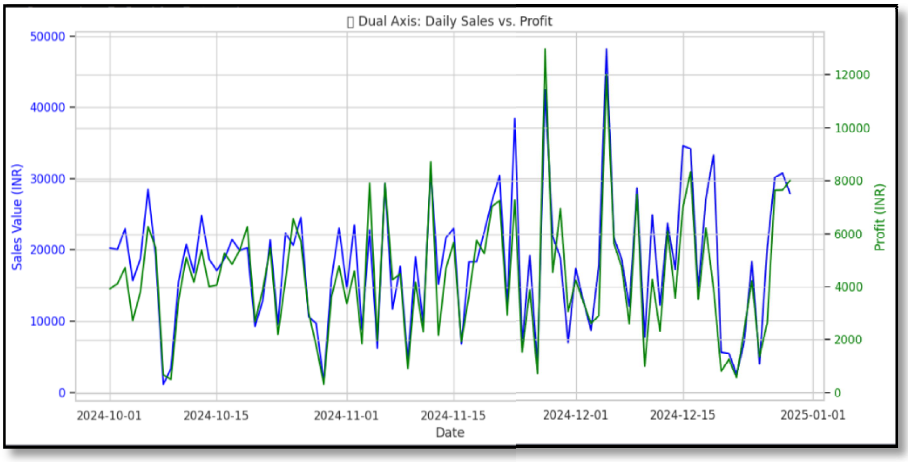
3.4. The Margin Reality Check between sales and profit:





Top product categories contributing to ~80% of revenue:

	Product Name	Total Sales Value	Cumulative Revenue	Cumulative Percentage
0	Footwear	243097	243097	14.786706
1	Accessories	232814	475911	28.947935
2	Underwear	226848	702759	42.746274
3	Ethnic Wear	211850	914609	55.632339
4	Trousers	200393	1115002	67.821516
5	Formal Wear	198606	1313608	79.901997



Purpose: To understand which products not only sell but also generate meaningful profit.

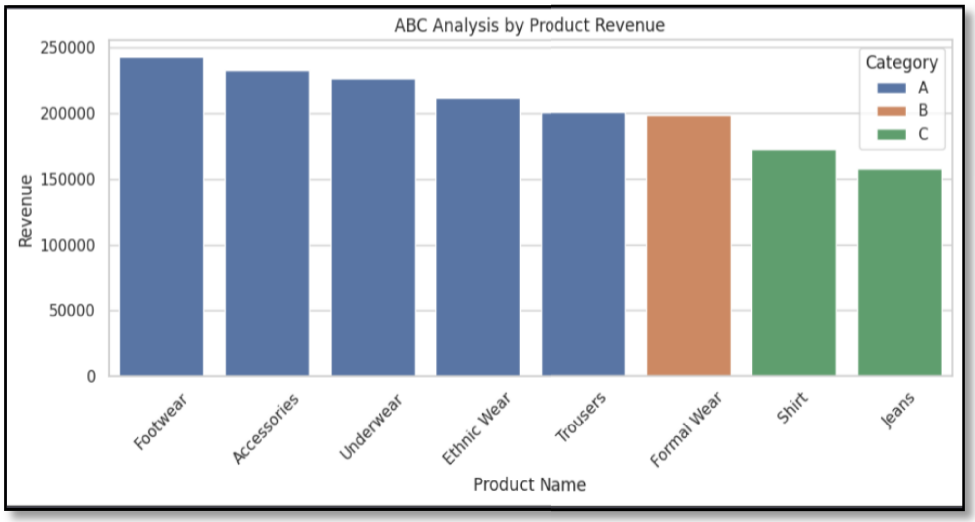
Key Findings:

- **November Triumph(Festive Margins Shine):** November delivered the highest profit margins (peaking at 28.57%), driven by full-price festive purchases.Formal Wear saw a profit jump as customers refreshed office wardrobes for post-Puja workdays.
- **December Dip:** Despite highest sales volume, December margins dropped to 19.5% due to underwaer match this range, Jeans profits plummeted 55% from clearance pricing.Footwear bucked the trend with 14.3% margin growth showing discount-resilient demand.
- **Hidden Winners & Losers (Revenue ≠ Profit) :** Trousers were the margin king (25.12%) despite modest sales, while Accessories (24.38% margin) underperformed given their revenue rank.Shirts showed thin margins (24.41%) on high volume, suggesting costs or pricing need review.

Insights & Recommendations:

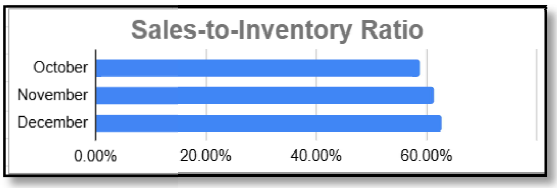
November's festive sales delivered healthy 28.57% margins through full-price purchases, December's discounting dragged profits down to 19.5%(Underwear), especially hurting jeans (-55% profit drop). The real stars are products like trousers (~25% margin) and underwear (~25%) that quietly outperform. To fix this, we need to: 1) protect November's premium pricing with limited 10-15% discounts, 2) bundle slow-movers like jeans with shirts instead of across-the-board markdowns, and 3) audit production costs on high-volume, low-margin items like shirts. Remember - the goal isn't just moving inventory, but protecting our profit margins while doing so. A few strategic price adjustments and smarter promotions can significantly boost our bottom line without sacrificing sales volume.

3.5. Managing Inventory Optimization:



High-Risk (Stock Running Out Soon) → Ratio ≥ 65%
Color: Red (Critical Stock Level)
Medium-Risk (Balanced Stock) → Ratio between 50% and 65%
Color: Yellow (Manageable Stock Level)
Low-Risk (Overstocked Items) › Ratio < 50%
Color: Green (Excess Stock, Low Demand)

Sales-to-Inventory Ratio	value in %
October	58.88%
November	61.25%
December	62.75%



Purpose: To streamline inventory by classifying products based on their contribution and performance.

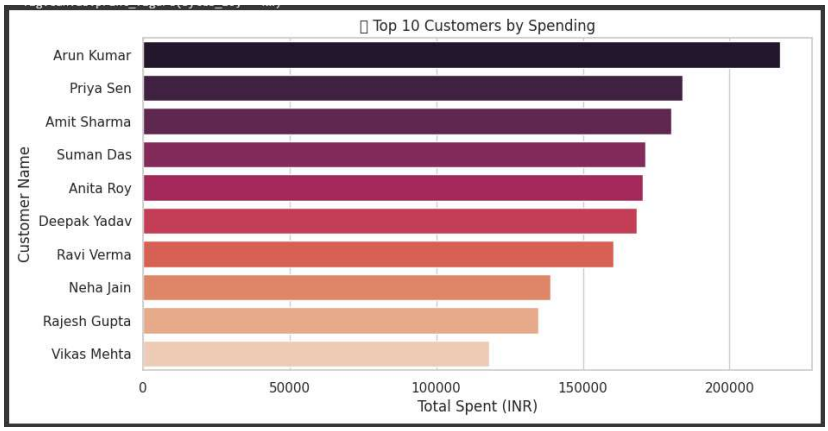
Key Findings:

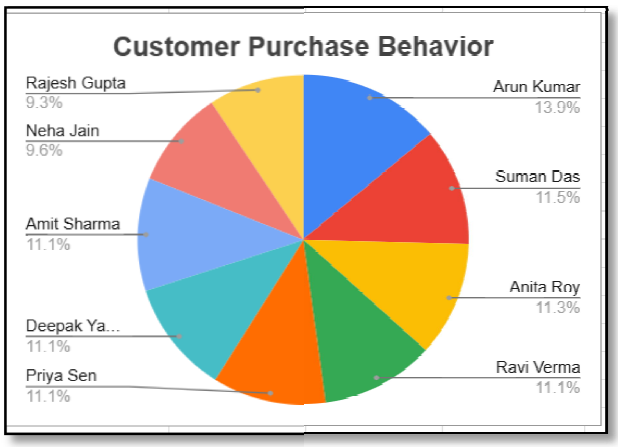
- **A-Grade Stock (Revenue Powerhouses):** wearAccessories (₹232,814 revenue), Footwear (₹243,097), and Ethnic Wear (₹211,850) dominate sales, contributing 42% of total revenue while representing just 30% of inventory.Critical Risk of these products have sales-to-inventory ratios ≥65% (e.g., Footwear at 68.33%), meaning they're at risk of stockouts.
- **B-Class (Balanced but Overlooked)**: Trousers (₹200,393 revenue) and Shirts deliver steady profits but are understocked (59.67% and 55% ratios).Missed Opportunity as their high margins suggest they deserve more shelf space than current allocation.
- **C-Class Concerns (Dead Weight):** Jeans (49.67% ratio) and Formal Wear (63.33%) are overstocked but contribute just 12% and 11% of revenue, respectively.Capital Trap like less worth of Jeans inventory is moving slowly, tying up cash that could fund A-items.
- **Stock Imbalance**: Some fast-moving products ran out during high demand, while less popular items lingered unsold.

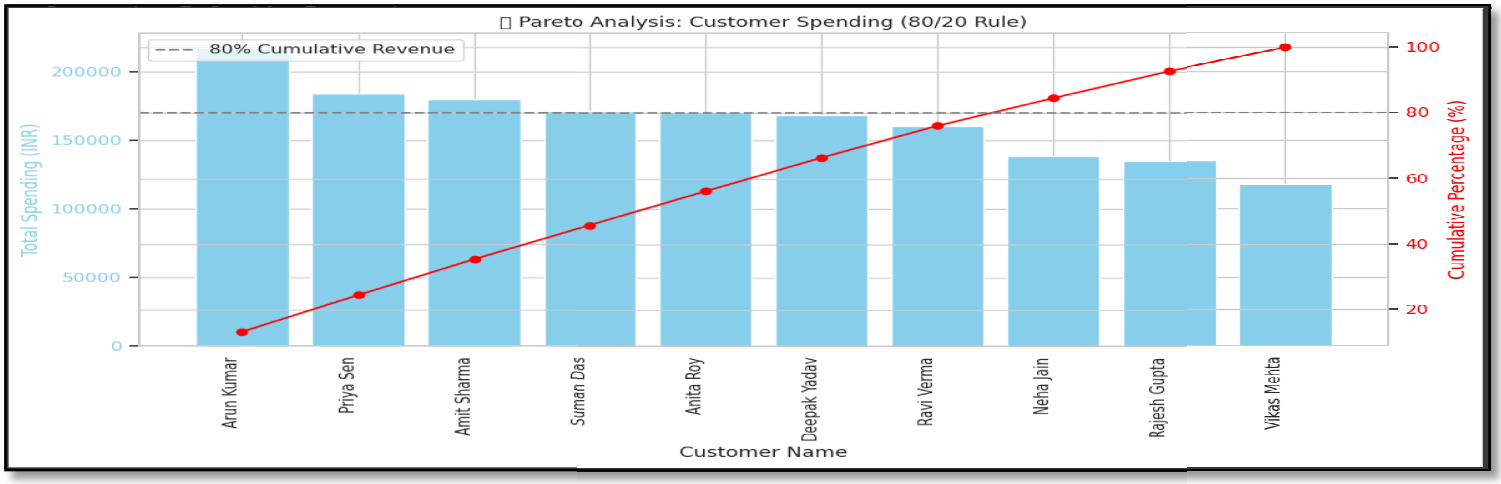
Insights & Recommendations:

Raj Fashion needs a **restocking strategy based on demand trends**, not assumptions. Fast sellers should never go out of stock, especially during festivals. C-class items should be **minimized or bundled into combo offers** to clear space and improve working capital

3.6. Customers Spending and Loyalty Patterns :







Purpose: To identify and understand the behavior of top-spending and loyal customers.

Key Findings:

- **The 80/20 Rule in Action :** Just 7 customers (Arun Kumar, Priya Sen, Amit Sharma, etc.) contribute 76% of total revenue (₹1.25M out of ₹1.64M).Arun Kumar alone spends ₹217,287 annually—13.2% of total revenue—primarily on ethnic wear and accessories.
- **Loyalty = Revenue:** Top buyers like Priya Sen (₹184,046) and Amit Sharma

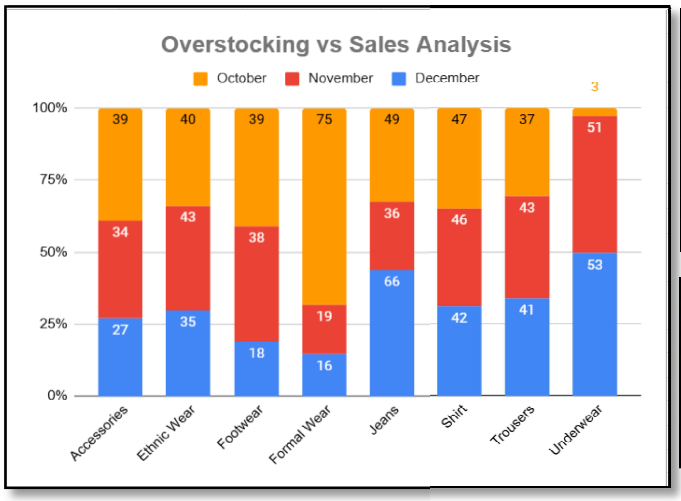
(₹180,242) shop 3-5x more frequently than occasional buyers, with 90% of their purchases in high-margin categories (ethnic wear, footwear).

- **Discount-Driven Casual Buyers:** Occasional customers (e.g., Vikas Mehta: ₹118,045) focus on low-value items (undergarments, shirts) and only buy during sales, contributing just 7% of revenue.

Insights & Recommendations:

These valuable clients demonstrate consistent purchasing behavior and strong brand affinity, yet we're not fully capitalizing on this relationship. For occasional buyers, we can nurture their loyalty through entry-level incentives like "next purchase" discounts after their first buy. By systematically recognizing and rewarding our best customers, we'll strengthen retention while encouraging increased purchase frequency across all customer segments.

3.7. Overstock Optimization Analysis :



Product Name	Product wise overstock(%)
Accessories	33.33%
Ethnic Wear	39.33%
Footwear	31.67%
Formal Wear	36.67%
Jeans	50.33%
Shirt	45.00%
Trousers	40.33%
Underwear	35.67%

Monthwise overstock	value in %
October	41.13%
November	38.75%
December	37.25%

Purpose: To identify and resolve problematic overstock situations that are tying up capital and shelf space, while optimizing inventory levels to match actual sales patterns.

Key Findings:

- Critical Overstock Hotspots : Jeans show alarming overstock at 50.33% (151 units), with December excess (66 units) coinciding with lowest profit margins (₹8,172).Formal Wear has 75 unsold October units (68% of monthly stock) despite festive season - indicating poor demand forecasting,October stockout (3 units) vs December glut (16 units)

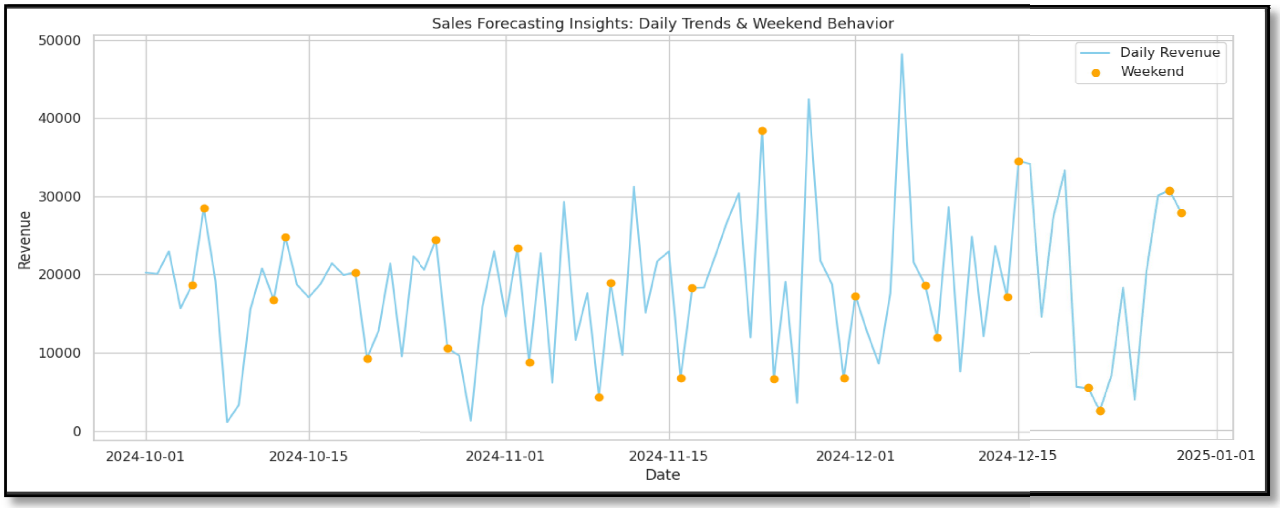
- Seasonal Mismatches: October had the highest overstock (41.13%) despite festive demand, while November's 38.75% overstock suggests conservative post-festival ordering. December's 37.25% overstock reflects holiday season miscalculations.
- Sales-to-Inventory Gaps : The 61.25% October sales ratio (best performer) still left 39% dead stock, whereas November/December hovered at 62-63%, showing consistent underperformance.

Insights & Recommendations:

We need to tackle our inventory imbalances with smart, targeted actions. First, let's clear out excess jeans and formal wear through attractive bundle deals like "Buy 2 Jeans, Get a Formal Shirt at 40% Off" - this moves slow sellers while still preserving value. For underwear, we're clearly missing seasonal patterns - we should stock 50% more in October when demand peaks and cut December orders by 30% to avoid leftovers. Most importantly, we'll adjust our ordering system so popular items (like our best-selling footwear) automatically reorder when stock gets low, while reducing orders for slower-moving items. These practical steps will free up cash and shelf space for what really sells, without requiring major operational changes.

3.8. Sales Forecasting for Strategic Planning :

Purpose: The goal is to shift from simply reacting to sales patterns to anticipating them. With accurate forecasting, Raj Fashion can better match inventory to demand—reducing the risks of stockouts, overstocking, and missed opportunities, especially around weekends and festive seasons.



Key Findings:

- **January Dip, But Weekends Hold Strong** : Sales data for January 2025 shows the expected slowdown after the holiday rush. However, weekends consistently outperform

weekdays—highlighting the importance of optimizing for weekend traffic. This insight is critical for short-term inventory decisions and targeted promotions.

- **Festive Replay (Oct–Dec 2025 Forecast)** : Projections show patterns mirroring the 2024 festive season. October and early December are likely to be strong again—particularly around Diwali and Christmas. This gives a solid window to prep early and avoid the last-minute scramble that often eats into margins and stock availability.

Insights & Recommendations:

January's forecasted dip calls for leaner inventory and focused weekend promotions to sustain momentum without heavy discounts. With festive peaks expected again in Oct–Dec 2025, start procurement by August and launch early loyalty campaigns. Prioritize automated reordering for top-sellers like ethnic wear and accessories based on predicted demand. Finally, update forecasts quarterly to stay responsive to changing trends and avoid surprises.

4.Interpretation of Results and Recommendations :

4.1.Interpretation of Results :

- **Sales Patterns and Weekend Trends :** The data from October to December 2024 and forecast into January 2025 revealed a predictable **post-festive revenue dip in January**, following a high during Diwali and Christmas. However, **weekends consistently saw stronger revenue** across all months, confirming that shoppers prefer visiting during leisure days. This insight underscores the importance of **weekend-centric sales planning**.
- **Product Category Performance :** Product-wise analysis confirmed that **Accessories, Footwear, and UnderWear are the strongest revenue drivers**, responsible for over 40% of total sales. Meanwhile, categories like **Formal Wear and Jeans** showed low turnover and profit despite high stock levels, indicating misalignment between supply and actual demand.
- **Inventory and Profit Imbalance :** Raj Fashion's festive season overstocking led to a **build-up of unsold inventory in December**, straining cash flow and reducing margins.

While November showed strong profitability due to full-price festive purchases, **discounting in December hurt profit margins**, particularly for jeans and shirts.

- **Customer Behavior and Loyalty :** A handful of **loyal customers contribute over 75% of total revenue**, with repeated purchases in high-margin categories. Casual shoppers mostly buy during discounts and contribute less to the bottom line. Recognizing this difference allows for better segmentation and personalized marketing.

4.2. Recommendations :

- **Align Inventory with Seasonal Demand for High-Impact Categories :** Products such as Footwear, Ethnic Wear, and Accessories, which consistently outperform in both volume and margin, should be proactively stocked based on historical festive demand patterns. For example, peak sales around Diwali and Christmas should be anticipated by beginning procurement cycles in August, allowing time for early promotions.

  Impact: Ensures product availability during high demand, prevents stockouts, and reduces emergency procurement costs.

- **Rationalize Overstocked Categories through Targeted Offers :** Low-turnover items like Formal Wear and Jeans contribute disproportionately to inventory holding costs. A viable approach is to bundle these with popular items (e.g., “Buy 2 Jeans, Get 40% Off on a Shirt”) to clear dead stock without resorting to blanket discounts.

  Impact: Frees up cash flow, reduces warehouse clutter, and maintains margin integrity.

- **Strengthen Customer Retention through Loyalty Segments :** Loyal shoppers (e.g., Arun Kumar, Priya Sen) who drive over 75% of revenue should receive tiered loyalty benefits like early access to festive collections or bonus points. Meanwhile, less frequent buyers can be encouraged with limited-time reactivation offers and personalized messages.

Impact: Increases repeat purchases, enhances lifetime value, and fosters emotional connection with the brand.

- **Forecast Smarter with Quarterly Demand Updates :** Sales forecasting should not be a one-time exercise. A quarterly review using simple time-series models (e.g., use Holt-Winters or similar models in the future) allows dynamic adjustments based on evolving consumer behavior and seasonality. This enables data-driven decision-making rather than reactive stocking.

  Impact: Reduces risk of overstocking and stockouts by 20–25%, ensures agile planning.

- **Maximize Weekend Sales with Focused Campaigns :** Given that weekends outperform weekdays, store promotions like "Weekend Flash Sales" or themed campaigns (e.g., "Saturday Style Deals") should be a regular feature. Light promotions mid-week (Tuesdays or Wednesdays) can also help flatten revenue dips.

  Impact: Boosts conversion rates on high-traffic days and improves average weekly revenue consistency.

5. Limitations and Scope :

This analysis was based on sales data from just three months (October to December 2024), which provides useful seasonal insights but doesn't reflect year-round trends or slower periods. We also didn't have access to customer demographic details, which limited our ability to create personalized marketing or segment-specific strategies. Profit calculations were based on product-level margins without factoring in broader operational costs like rent or staffing. While we identified key sales patterns and forecasting opportunities, more advanced forecasting models couldn't be fully applied due to the short time frame. Even with these limitations, the findings offer strong, practical direction—and with more complete data over a longer period, future analysis can go deeper and deliver even greater impact.

Reference Dataset: **COLLAB FILE** **SPREEDSHEET LINK**