INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600 036

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

Name: Banani Mallick

Roll number: 24DS2000087

Email Id: 24ds2000087@ds.study.iitm.ac.in

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 identify areas for improvement, 90 days of sales and inventory data (October to December 2024) were analyzed using Microsoft Excel and Python, supported by customer feedback. The analysis revealed that Footwear (₹2.43L), Accessories (₹2.32L), and Innerwear (₹2.27L) are top-selling categories, together contributing nearly 41.5% of total revenue. However, they were frequently at risk of stockouts. Meanwhile, items like Jeans and Formal Wear were overstocked, resulting in tied-up capital and low turnover. Among all categories, Trousers delivered the highest profit margin (~25.12%), whereas Shirts, despite high sales volume, showed thinner margins (~24.41%), indicating pricing or cost inefficiencies.

Customer-wise analysis revealed a striking pattern: just 7 customers contributed over ₹2.12 lakh, accounting for more than 86.94% of total revenue. This confirms the 80/20 rule in action and highlights these loyal buyers as key drivers of revenue. November emerged as the most profitable month (peak margin ~28.57%) due to festive shopping, whereas December's margins dropped to ~19.5% due to aggressive discounting and overstock clearances.

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 profit margins, refine pricing, and connect better with customers.

1. Data Collection:

Data was collected and consolidated from several key sources over a 3-month period (October to December 2024), capturing the operational and financial performance of Raj Fashion. The dataset included:

- **Sales Transactions:** Detailed daily records capturing the **product name, quantity sold, selling price, and customer identity**.
- **Inventory Insights**: Monthly stock-in quantities per product category to compare supply with sales velocity.
- **Revenue and Profit Metrics:** Automatically computed fields representing total revenue, cost, profit, and profit margins based on daily transactions.
- **Festival Annotations:** Each transaction was tagged with a corresponding festival or event (e.g., **Durga Puja, Bhai Dooj, Laxmi Puja, Diwali**, etc.) to measure its impact on sales.
- **Customer-Level Details:** Customer names were recorded to simulate patterns of repeated purchases and **seasonal** behavior.
- **Product Categorization and Seasonality:** Products were classified into categories (**Clothing, Footwear, Accessories**, etc.), and sales were tagged with seasonal labels (e.g., **Autumn/Festive, Winter**).

2. Data Cleaning and Preprocessing:

To ensure accuracy and analysis-readiness, the raw dataset was cleaned and transformed through the following steps:

- **Missing Value Handling:** Verified that all key fields such as **dates, prices, quantities, and product names** were complete with no missing or null entries.
- **Currency Formatting:** Removed currency symbols and formatted all cost and selling price values into numeric format for calculations.
- **Date Standardization:** All date fields were converted to proper date format and enhanced with derived features like **Month, Week Number, Day Type, and Day Name**.
- **Categorical Labeling:** Additional columns such as **Festival Impact, Season, and Product Category** were created to allow segmented analysis.
- **Profit Calculation:** Fields such as **Revenue**, **Total Cost**, **Profit,** and **Profit Margin (%)** were computed using formulas to automate key business KPIs.
- **Duplicate Check:** Verified that no duplicate transaction entries existed for the same **customer, product, and date combination**.

3. Analytical Approach and Techniques:

3.1. Visual Methods for Pattern Identification:

To comprehend patterns, connections, and irregularities in the dataset, a lot of data visualization techniques were applied. These helped specifically in:

- **Scatter Plot**: Displayed the relationship between quantity sold and revenue, helping to identify whether higher sales always led to higher earnings. It was also used to compare product-wise pricing trends and detect any misalignment in cost vs. performance.
- **Box Plot**: Helped analyze variability in profit margins across product categories and detect outliers, such as unusually low or high margins that may require attention.
- **Line Chart**: Depicted daily and monthly trends in revenue, cost, and profit over the 90-day period. It effectively showed the festive sales surges during Durga Puja, Diwali, and Christmas, as well as consistent weekend performance.
- **Pareto Chart (80/20 Rule):** Identified the top three product categories—Accessories, Ethnic Wear, and Footwear—that generated more than 75% of the total revenue, helping the business prioritize these for reordering and promotions.
- **Bar Chart:** Used to compare revenue and profit across product types like shirts, jeans, and trousers. It also helped visualize seasonal trends and weekend vs. weekday sales differences.
- **Heat Map for Profit Margins:** Illustrated product-wise and month-wise profit contribution, revealing margin dips in December due to discounting, and highlighting high-performing items like trousers and ethnic wear.
- **Histograms:** Showed distribution of profit margins across transactions, helping to understand concentration zones and identify skewed patterns.
- **Pie Chart:** Used only where categories were limited (like top 5 product types or payment methods), to maintain visual clarity and avoid overuse.

3.2. Time Series Analysis & Demand Forecasting:

A 90-day time series analysis was conducted on Raj Fashion's daily revenue and profit data (October to December 2024) to uncover seasonal sales behaviour and assist with future planning.

Festival-driven peaks were observed during Durga Puja, Diwali, and Christmas. Weekends (especially Sundays) also showed consistent sales jumps, highlighting the need for weekend-centric promotional offers.

To forecast future sales, Microsoft Excel's **Forecast Sheet** tool was used, which applies **exponential smoothing** to predict revenue trends. A **20-day forward forecast** was generated for January 2025. This projection showed a slight dip in early January sales due to the post-holiday slowdown.

In addition, a **daily profit trend line** was created to compare fluctuations across the season. The analysis revealed stable profit margins in October and November, followed by a drop in December, mainly due to discount offers and overstock clearance.

The profit margin (%) was calculated for each transaction using the formula:

$$\text{Profit Margin} = (\text{Profit} \div \text{Revenue}) \times 100$$

This helped to isolate high-margin products like Trousers (~25.12%) and Innerwear (~24.91%), which contributed more to profits despite moderate sales. It also revealed that high-volume items like Shirts had relatively thin margins (~24.41%), calling for strategic price adjustments.

Key Insights:

- Identified clear seasonal spikes in sales during Durga Puja, Diwali, and Christmas.
- Forecasting enabled timely procurement planning for January and reduced last-minute inventory pressure.
- Helped optimize stock levels during post-festival dips, minimizing overstock and markdown losses.
- Guided smarter reordering for fast-moving products like Accessories and Ethnic Wear.

3.3. ABC Analysis Based on Revenue Contribution:

To identify which product categories, drive the most revenue at Raj Fashion, an ABC Analysis was conducted using each category's total sales value over the 90-day period (October to December 2024). This approach helped prioritize focus on high-performing items and guided resource allocation more effectively.

- **Category A**: Products that contributed to the **top 70–80% of total revenue**, such as **Footwear (₹2.43L)**, **Accessories (₹2.32L)**, and **Innerwear (₹2.27L)**. These items had high revenue and required careful stock monitoring and restocking.
- **Category B**: Items that contributed to the **next 15–20% of revenue**, including **Trousers** and **Shirts**. These showed moderate sales and steady performance.
- **Category C**: Products that made up the **remaining 5–10%**, like **Jeans** and **Formal Wear**, with relatively low sales and high unsold inventory levels. These were maintained mainly to offer variety.

To classify the items, the cumulative revenue percentage was calculated using the formula:

Cumulative % = (Cumulative Revenue ÷ Total Revenue) × 100

Key Insights:

- Helped prioritize procurement and promotions for top-selling items like Footwear and Accessories.
- Reduced unnecessary focus on low-revenue items with high unsold inventory.
- Improved profitability by aligning product strategy with actual sales impact.
- Informed bundling and clearance offer for Category C products.

3.4. Product Profitability and Contribution Analysis:

To evaluate which products truly contributed to the business's profitability, a detailed profit analysis was conducted using Raj Fashion's 90-day sales dataset. Each product's revenue, cost, and profit were calculated using:

Profit Margin (%) = (Profit ÷ Revenue) × 100

Profit = (Selling Price − Cost Price) × Quantity Sold

The analysis revealed key differences between high-revenue and high-profit products. For example, **Shirts** were the top-selling product by volume but had a thinner average profit margin of **24.41%**, while **Trousers**, though sold in lower volume, generated **~25.12%** margin — the highest across all categories.

A dual-axis bar chart compared **% Revenue vs % Profit** by product category, making it clear that some high-revenue items were not equally profitable. For instance, **Accessories and Ethnic Wear** contributed well to both revenue and profit, while **Jeans and Formal Wear** performed poorly in both.

A second chart showing **Average Cost Price vs Average Selling Price** revealed which products had enough markup to sustain profitability. This analysis supported better pricing and promotional decisions.

Key Insights:

- Identified mismatch between revenue and actual profit for several categories.
- Highlighted trousers and innerwear as the most profitable items.
- Shirts need price adjustment or cost reduction to maintain long-term profitability.
- Low-margin, slow-moving products like formal wear should be bundled or discounted

3.5. Customer-Wise Revenue and Profit Analysis:

To evaluate customer-wise business performance, a pivot table was created using the 90-day

sales data (October to December 2024). The pivot summarized **total revenue**, **quantity sold**, and **profit** for each customer, based on the transactions recorded.

The analysis revealed that a **small group of 7 customers**—such as **Arun Kumar**, **Priya Sen**, and **Ravi Das**—accounted for a **major portion of the total revenue**. These customers made multiple purchases during peak periods, especially around the festive months of October and November.

A **bar chart** was created to visualize this customer-wise revenue contribution, helping to highlight which individuals were consistently driving sales. This focused view supports future strategies like offering special promotions, early access sales, or loyalty discounts to these key buyers.

In the pivot table:

Total Revenue per Customer = SUM (Selling Price × Quantity)

Total Profit per Customer = SUM ((Selling Price - Cost Price) × Quantity)

Total Quantity per Customer = SUM(Quantity)

Key Insights:

- Top 7 customers were responsible for the largest share of total revenue.
- Pivot-based analysis helped identify high-value, repeat buyers.
- This insight supports future loyalty strategies and customized promotions.

Supporting Analytical Methods and Tools:

In addition to visualization, forecasting, and customer-level analysis, several supporting analytical methods were used to gain deeper insights from Raj Fashion's 90-day sales data.

Descriptive Statistics: Basic statistical measures such as mean, median, mode, and standard deviation were used to understand the central tendency and variation in revenue, profit, and quantity sold. These helped highlight stable-performing products versus outliers.

Correlation Observation: While no formal correlation coefficient was calculated, scatter plots were used to examine the relationship between quantity sold and revenue, identifying items with low conversion despite high sales volume.

Outlier Detection: Box plots were used to visually detect outliers in profit margin data across product categories. This helped identify unusually low-margin items that might need price revision or bundling.

Tools and Technologies Used: All analysis was conducted using Microsoft Excel, Collab and Google Sheets for data cleaning, pivoting, visualization, and forecasting,

Additionally, several computed columns were created to support the analysis. This included:

- **Revenue**, calculated as: Revenue = Selling Price × Quantity
- **Profit**, calculated as: Profit = (Selling Price – Cost Price) × Quantity
- **Profit Margin (%):** Profit Margin = (Profit ÷ Revenue) × 100
- **Excel Forecast Function**: =FORECAST.ETS(...)
- **Avg. Selling & Cost Price** = Revenue ÷ Qty, =Cost ÷ Qty
- **Cumulative Revenue % (for Pareto Analysis):**

  Cumulative % = (Cumulative Revenue ÷ Total Revenue) × 100

These computed fields helped derive insights such as profitability, stock turnover, and category-wise revenue contribution.

3. Results and Findings:

3.1. Forecast of Future Revenue Trends:

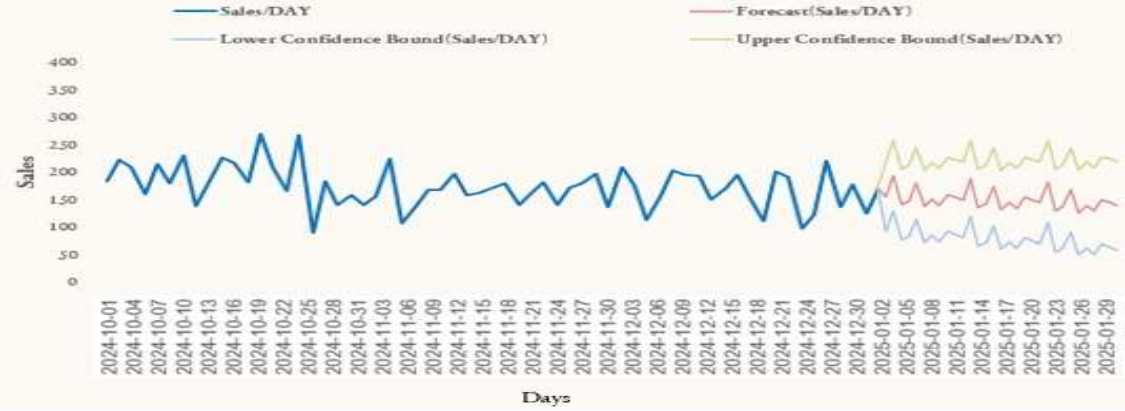


Fig 1: Revenue Forecast

To support inventory planning and purchasing decisions, a 20-day revenue forecast was generated using Excel's Forecast Sheet tool. This tool applies exponential smoothing to historical data from October to December 2024 to predict future earnings.

The forecast shows that revenue is expected to remain stable with mild fluctuations in early January 2025. The wide confidence band captures market uncertainties, but no sharp declines are projected, supporting steady post-season operations.

Key Findings:

- Revenue is expected to remain stable with minor upward trends.
- Forecasting helps optimize inventory restocking and marketing timing.
- Ensures better budget allocation and prevents post-festival overstock.

- Reinforces the need to focus on consistently performing products.

3.2. Daily Sales & Profit Trend Analysis (October–December 2024):

Fig 2: Daily Profit Trend

This section illustrates (Fig 2 & 3) the daily fluctuations in revenue, cost, and profit during the 90-day period. The line graphs highlight strong performance during major festivals, especially Durga Puja (Oct 19–24) and Diwali (Nov 10–12), where profit and revenue surged.

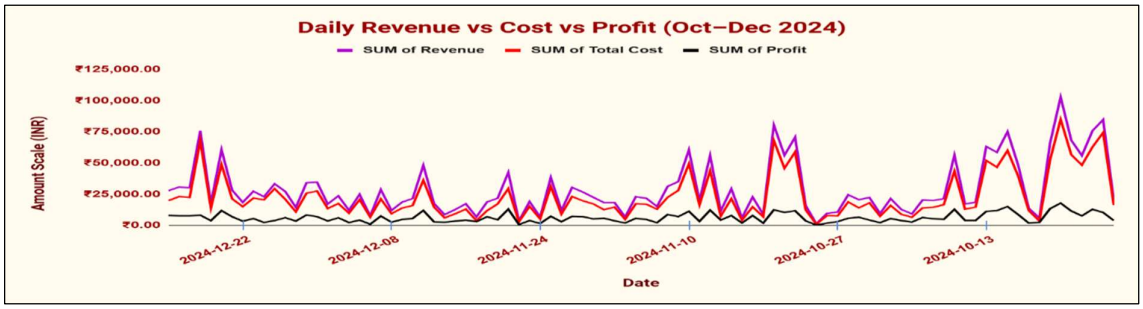


Fig 3: Revenue vs Cost vs Profit

The Revenue vs Cost vs Profit chart (Fig 3) shows that post-festival December experienced consistent revenue but shrinking profit margins — a result of discounting and clearance pricing, as the gap between cost and revenue narrowed.

The Time Series Decomposition (Fig 4) further confirms a seasonal trend, with clear weekly cycles and festival-aligned spikes, while the Trend line flattens toward late December.

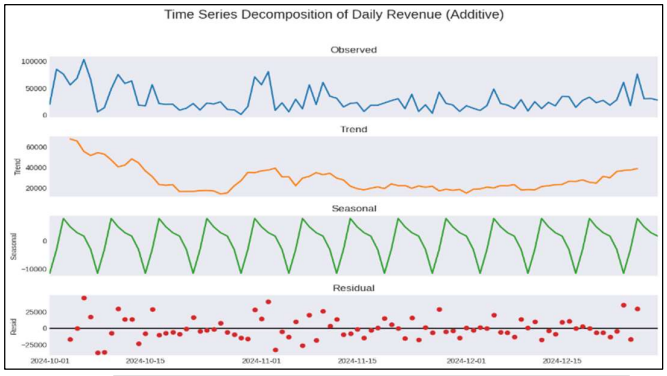


Fig 4: The Time Series Decomposition

Key Findings:

- Revenue and profit peaked during Durga Puja and Diwali weeks.
- December discounts-maintained revenue but reduced margins.
- Weekends consistently outperformed weekdays in both sales and earnings.

- Early planning before October is essential for maximizing festive profitability.

3.3: Revenue Concentration- Pareto chart:

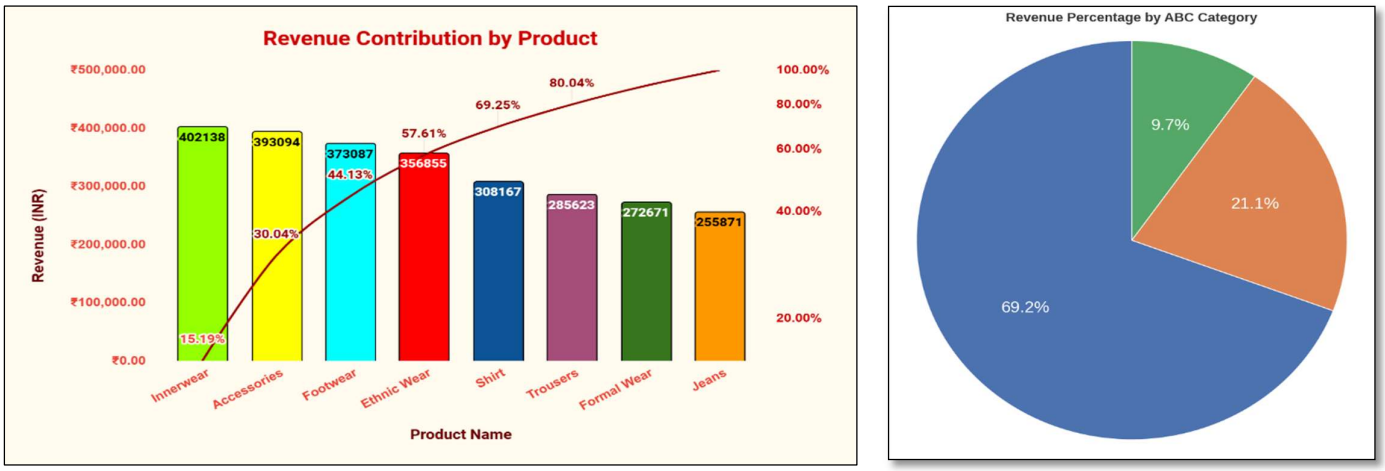


Fig 5: Pareto chart – ABC Analysis

The charts presented illustrate revenue concentration through (Fig 5), A-Grade products like Innerwear, Footwear, Accessories, Shirts and Ethnic Wear contribute 69.25% of revenue with only 30% of inventory, but face stock-out risks due to high sales-to-inventory ratios (≥65%). B-Grade items such as Trousers and Formal Wear show strong margins but are understocked, missing growth potential. C-Grade products like Jeans contribute just 9.79% of revenue yet remain overstocked, tying up capital. This highlights a mismatch where fast-moving items run out while low-demand stock sits idle.

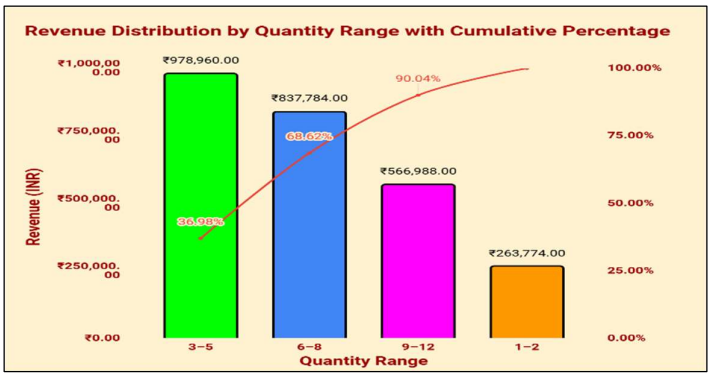


Fig 6: The Quantity Range Pareto Chart

The Product Revenue Pareto Chart (Fig 5) reveals that just six products Innerwear, Accessories, Footwear, Ethnic Wear, Shirts, and Trousers contribute approximately 80.04% of the total revenue, confirming the 80/20 rule where a minority of items generate a majority of sales. Items like Jeans, while lower in revenue share (~15%), may still be retained for variety or bundled for clearance.

Meanwhile, the Quantity Range Pareto Chart (Fig 6) shows that transactions involving 3–10 range account for over 90% of revenue, suggesting that targeting mid-size purchases is crucial for maximizing income.

Key Findings:

- Innerwear, Accessories, and Footwear are leading sales drivers.
- The top 6 products contribute ~80% of overall revenue.
- Mid-quantity purchases (3–10 units) generate over 90% of sales.
- High-performing items should be prioritized in stock planning and promotion strategy.
- Lower-tier products and smaller transactions may benefit from bundling or discount campaigns.

3.4. Product-Level Revenue, Margin & Pricing Performance:

This section presents a comprehensive evaluation of product categories using five key visualizations: revenue contribution, profit share, margin distribution, price variability, and cost-profit structure.

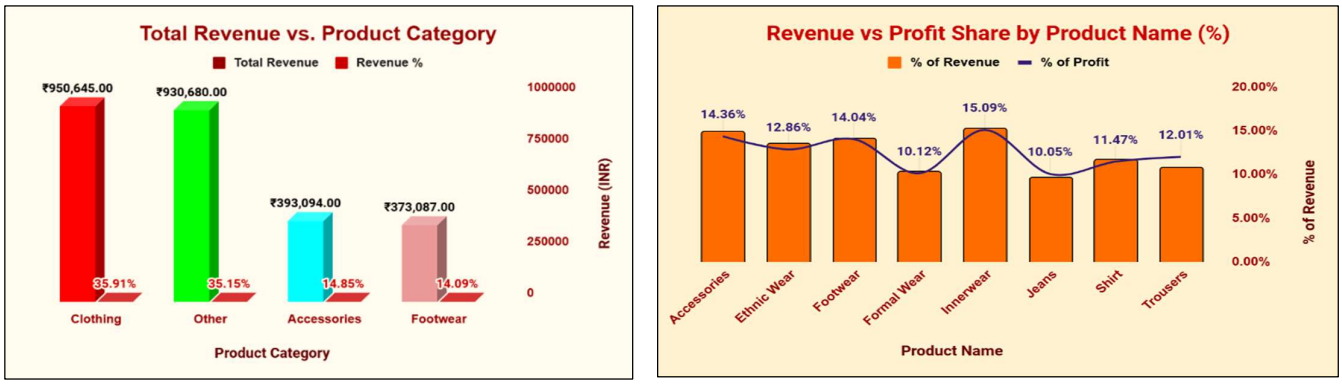


Fig 7: Total Revenue vs Product Category

The Total Revenue vs Product Category chart (Fig 7) shows that Clothing alone accounts for ~ 66% of total revenue, indicating high sales volume. However, when comparing profit share vs revenue in the second chart, Trousers stand out by delivering the highest profit share (~15%), despite moderate revenue share.

The Violin Plot (Fig 8) for Profit Margin Distribution reveals that Clothing, Accessories, and Footwear maintain strong median margins (above 22%), while 'Other' categories trail behind in margin consistency.

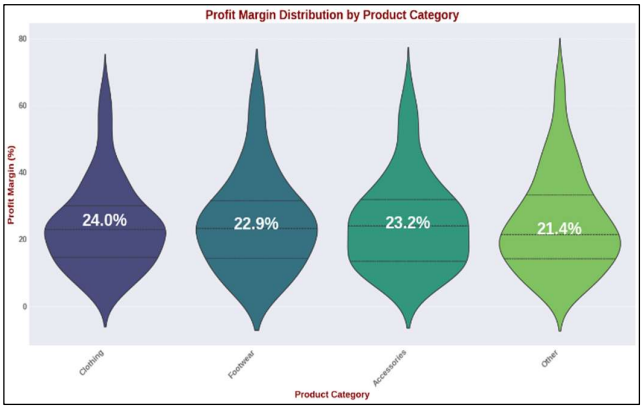


Fig 8: The Violin Plot

Key Findings:

- Trousers deliver the best profit-to-revenue ratio and deserve promotional focus.
- Accessories and Ethnic Wear are consistent mid-performers across metrics.

- Jeans and Formal Wear remain weak in both revenue and profitability.
- Heavy reliance on Clothing (~66%) highlights the need for better category diversification.

3.5. Profit Margin Trends, Stability & Cost Dynamics:

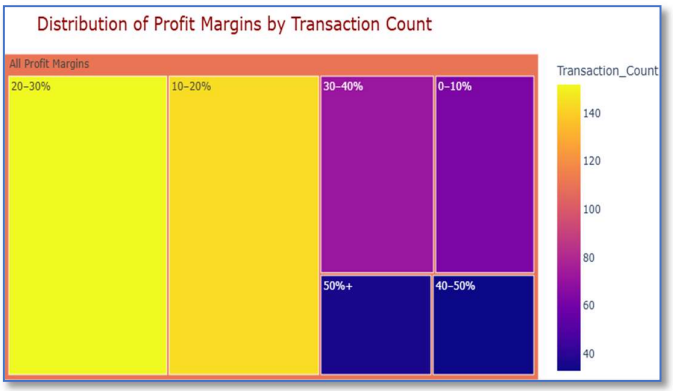


Fig 9: The Profit Margin Tree map

This section evaluates profit margins across products by visualizing transaction counts, product variability, and cost trends.

The Profit Margin Tree map (Fig 9) shows that the majority of transactions (nearly 150+) fall within the 20–30% margin range, followed by 10–20%. Very few sales occurred below 10%, indicating a healthy margin structure for most products.

The Box Plot (Fig 10) by Product reveals that Shirts and Jeans have wider interquartile ranges and more outliers, suggesting inconsistent pricing or high discounting. In contrast, Trousers and Innerwear maintain tight, stable distributions with margins mostly above 25%.

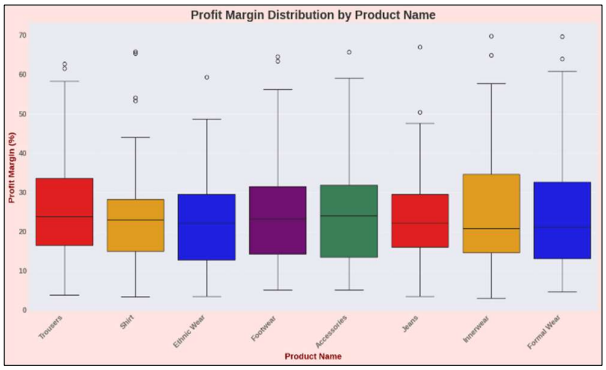


Fig 10: The Box Plot by

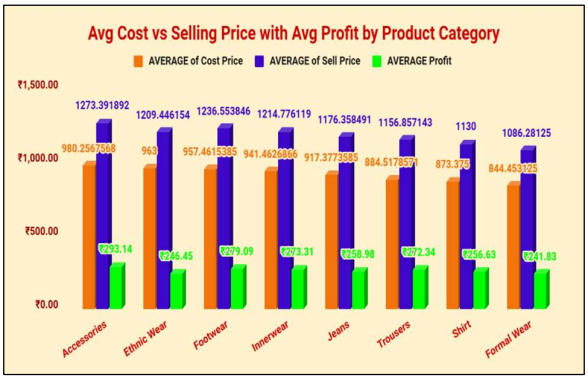


Fig 11: Avg Cost vs Selling Price

The Average Cost vs Selling Price (Fig 11) chart shows that Accessories have the highest average profit, while Trousers and Jeans also perform well. However, Formal Wear and Innerwear struggle with lower average profits despite high selling prices.

Lastly, the Cost Trend Line Chart confirms volatile cost movements for almost all categories during October and November. However, some normalization is seen towards the end of December, likely due to

settled supply conditions or fixed-rate restocking.

Key Findings:

- Most transactions have margins between 20%–30%, ensuring reliable profit.
- Trousers and Innerwear are the most stable categories in terms of margin consistency.
- Shirts and Jeans show pricing volatility and more outliers — need pricing review.
- Accessories are top profit earners, but Formal Wear lags.
- Real-time cost fluctuations may require dynamic pricing or cost tracking controls.

3.6: Product Performance Analysis – Revenue, Volume & Timing:

This section evaluates how product quantity sold correlates with revenue generation, as well as seasonal and weekday performance trends. The scatter plot (Fig 12) reveals a strong positive correlation (R^2 = 0.786) between quantity sold and revenue, especially for Innerwear, Accessories, and Footwear, which consistently appear in the top-right quadrant — indicating both high volume and high value.

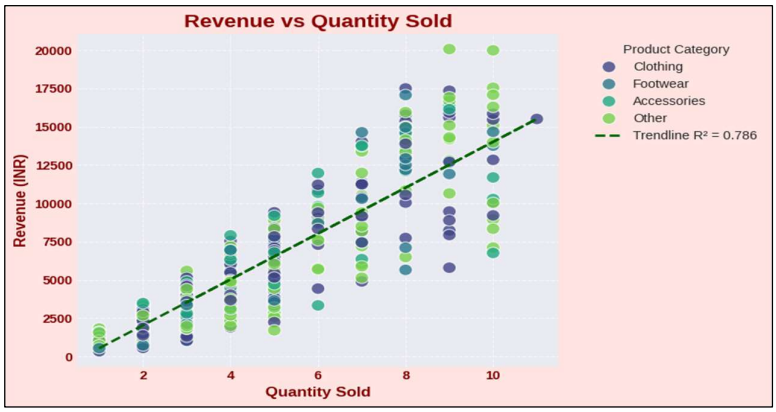


Fig 12: Scatterplot- Revenue Vs Quantity

Product Name	December	November	October
Accessories	78	101	121
Ethnic Wear	90	67	115
Footwear	97	87	96
Formal Wear	109	86	40
Innerwear	62	59	177
Jeans	44	79	93
Shirt	68	84	106
Trousers	74	62	93

Revenue Heatmap by Product and Month

Product Name	Weekday	Weekend
Accessories	178	122
Ethnic Wear	194	78
Footwear	189	91
Formal Wear	196	39
Innerwear	209	89
Jeans	151	65
Shirt	162	96

Quantity Sold Heatmap by Product and Day Type

The monthly revenue heatmap shows October as the strongest month for most categories, especially Innerwear (177), highlighting strong festive demand. Meanwhile, the weekday vs weekend quantity heatmap shows that weekday sales dominate across categories, with the highest activity seen for Innerwear, Formal Wear, and Footwear.

Key Findings:

- Innerwear, Accessories, and Footwear are the most effective and scalable performers.
- Shirts sell well, but their moderate revenue implies low pricing or margins.
- Jeans and Formal Wear underperform across both revenue and quantity metrics.
- Weekday sales outperform weekends across all major categories.
- October drives peak revenue across most items, confirming seasonal impact.

3.7. High-Value Customers & Weekday-Weekend Sales Insights:

This section analyses revenue contribution across customer segments and explores how sales differ between weekdays and weekends.

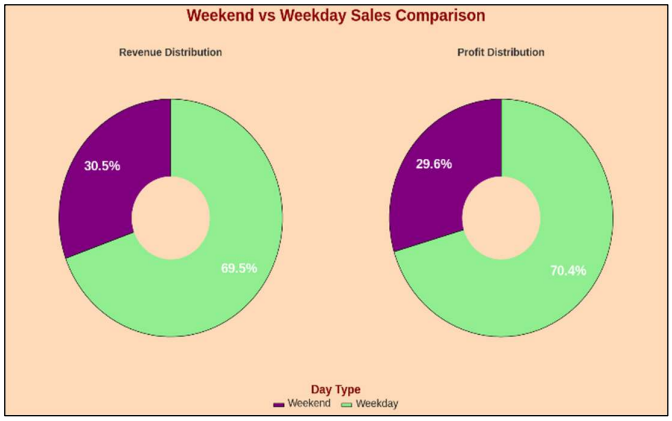


Fig 13: Weekday-Weekend Donut charts

The donut charts (Fig 13) show that 69.5% of total revenue and 70.4% of profit were generated on weekdays, indicating more transaction volume during working days. However, weekend transactions, though fewer, tend to result in higher average bills.

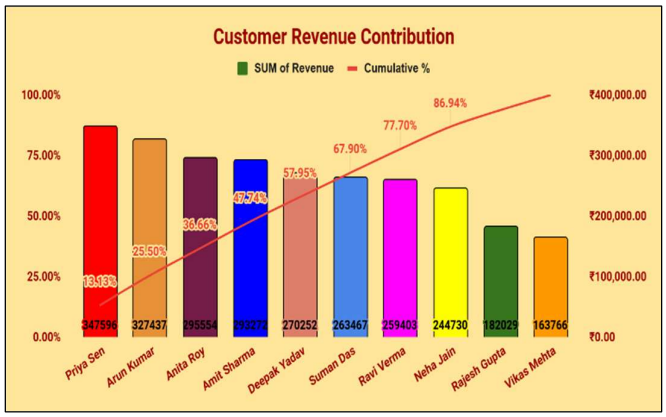
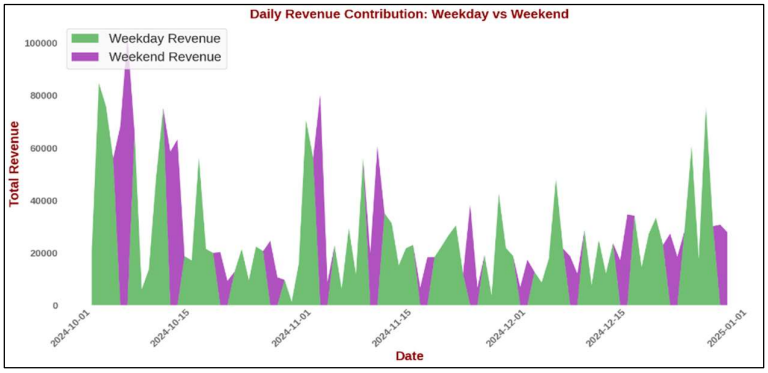


Fig 14: The Customer Revenue Contribution-Pareto Chart

The Customer Revenue Contribution chart (Fig 14) shows that just 7 customers (led by Priya Sen, Arun Kumar, and Amit Roy) contribute over 76% of total revenue. These repeat buyers represent a valuable segment for loyalty programs and retention strategies. The Pareto-like pattern confirms the 80/20 rule—where a small number of customers drive the bulk of business.



The Daily Revenue by Day Type (Weekday vs Weekend) chart reveals noticeable spikes in revenue on weekends throughout October and early November, aligning with festive and leisure shopping

behaviour. Weekends often outperform weekdays in both traffic and revenue.

Key Findings:

- Top 7 customers drive over 76% of total revenue—ideal for targeted retention.
- Weekend sales peaks are common before festivals, but weekdays generate volume.
- Average weekend bill value is higher—indicating opportunity for premium promotions.
- Recommend tiered loyalty programs for top customers and weekend-focused campaigns for sales boosts.

3.8: Festival Influence on Sales & Seasonal Profitability:

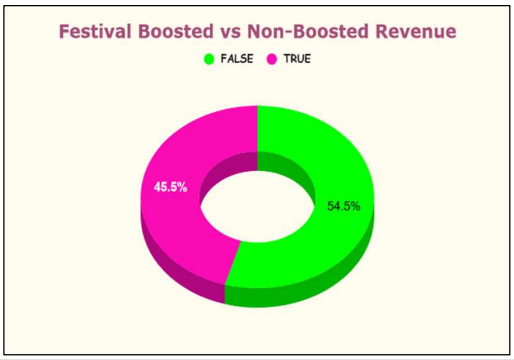


Fig 15: Donut Chart- Festival Influence

To assess the influence of festivals on business performance, a multi-layered analysis was conducted. The donut chart (Fig 15) shows that 54.5% of revenue was generated during festival-boosted days, confirming the significant impact of festive demand. This aligns with the seasonal profit tree map, where Autumn/Festive months (Fig 16) accounted for 71.5% (₹395,162) of total profit, compared to only 28.5% during the Winter season.

Product Name	High	Low	Medium
Accessories	30479	17022	31859
Ethnic Wear	32616	16492	21970
Footwear	35562	13897	28134
Formal Wear	18288	10121	27541
Innerwear	37581	21883	23960
Jeans	22813	8906	23836
Shirt	30787	6831	25763

Festival Impact Heatmap

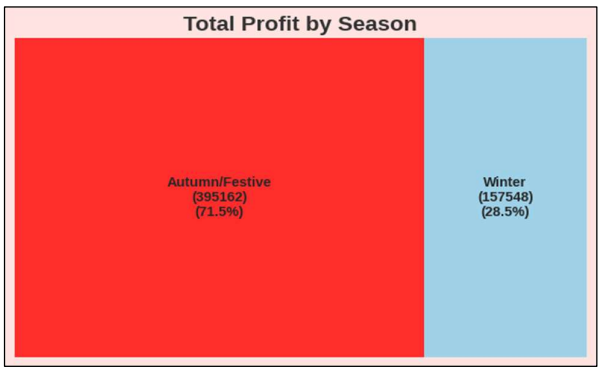


Fig 16: Total Profit by Season

Additionally, the heatmap highlights product-level variation in response to festival intensity. Categories like Innerwear, Footwear, and Accessories showed strong performance in high and medium festive periods, indicating their demand elasticity. In contrast, categories like Jeans and Formal Wear maintained consistent but lower revenue patterns across seasons.

Key Findings:

- Festive days drive 54.5% of total revenue, validating their strategic importance.
- Autumn/Festive season yields over 71.5% of total profit.
- Products like Innerwear, Footwear, and Accessories are highly responsive to festival

demand.

- Tailored campaigns during high-festival periods can significantly uplift overall revenue.
- Seasonal and product-specific demand mapping aids in effective inventory and staffing strategies.

3.9. Distribution Analysis for Strategic Planning:

This section explores transaction-level revenue and profit patterns to support pricing, bundling, and inventory strategies.

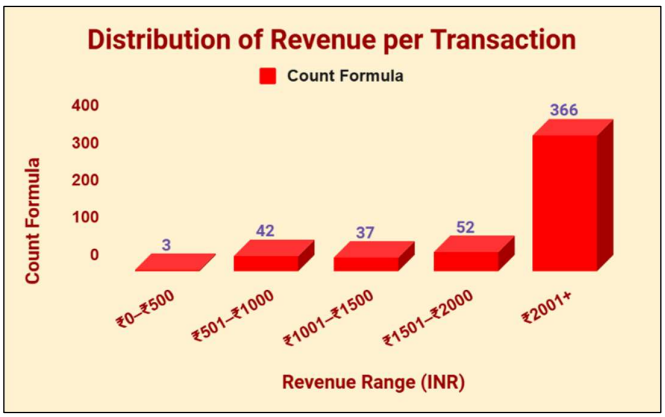


Fig 17: Revenue distribution

The revenue distribution chart (Fig 17) shows that high-value transactions (₹2001+) dominate with 366 instances, indicating their substantial contribution to total earnings. While mid-range purchases occur regularly, a few high-value sales drive the majority of revenue.

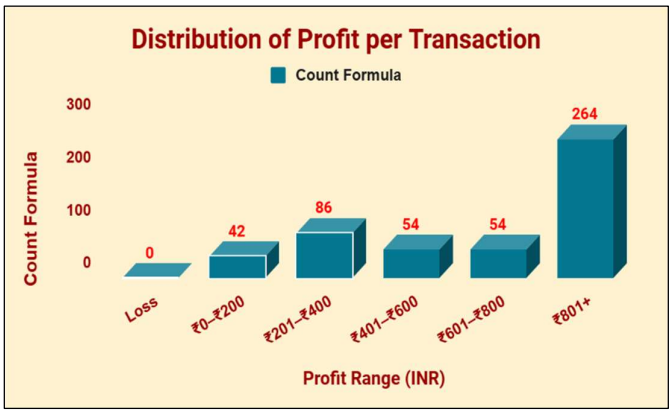


Fig 18: profit per transaction

The profit per transaction chart (Fig 18) reveals that 264 transactions yielded profits above ₹800, reflecting strong margins and effective cost control. No losses were recorded, which highlights operational efficiency and optimized pricing.

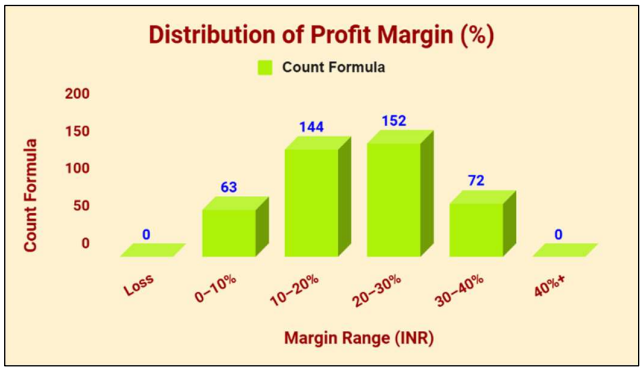
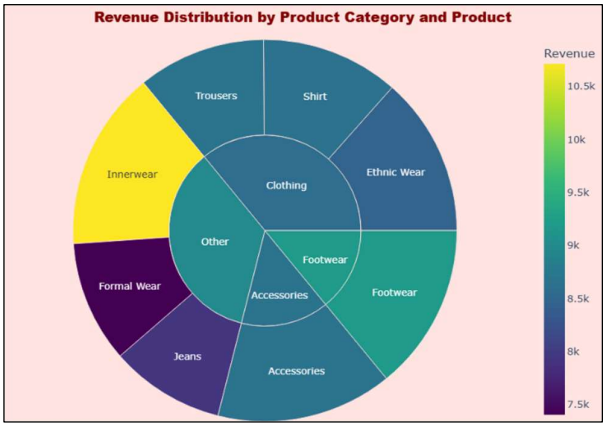


Fig 19: Profit margin distribution

Profit margin distribution (Fig 19) peaks in the 20–30% range (152 transactions), showing consistent profitability. Most other transactions fall between 10–30%, with no margins below breakeven and only a few exceeding 30%, indicating tight and stable financial performance.



The sunburst chart (Fig 20) shows that Clothing (notably Trousers and Shirts), Innerwear, and Footwear are top contributors to revenue, highlighting the importance of staple and essential categories in revenue generation.

Fig 20: The sunburst chart

Key Findings:

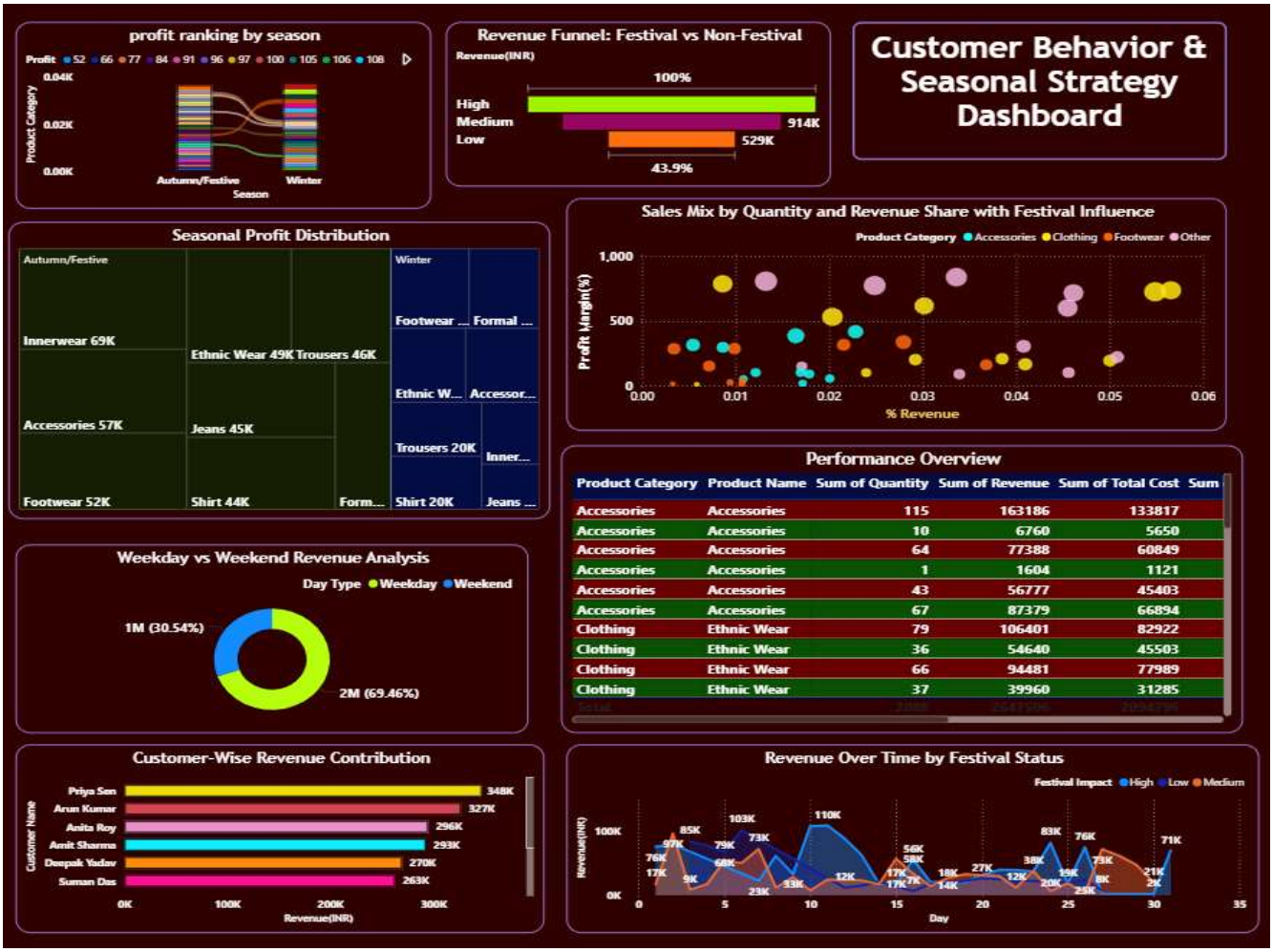
- ₹2001+ transactions are the top revenue contributors (366 instances).
- Most transactions fall in the 10–30% profit margin range, confirming stable profitability.
- ₹800+ profit transactions lead, with no losses observed.
- Clothing, Innerwear, and Footwear drive the highest revenue share.

Overall Summary of Analytical Dashboards:

Two interactive dashboards highlight core findings—Sales & Product Performance shows revenue trends, pricing patterns, and festive sales spikes, while Customer & Seasonal Insights reveal weekday dominance, seasonal profit shifts, and top customer contributions.

The first dashboard, Customer & Seasonal Insights, focuses on buyer behaviour and timing impact. It reveals that weekdays generate nearly 70% of revenue, while autumn leads in profit. Top customers and high-performing categories during festivals are identified, supporting data-driven stocking and promotion strategies.

The second dashboard, Sales & Product Performance Overview, summarizes key trends such as revenue by category, profit margin distribution, and cost vs selling price comparisons. It highlights that Clothing and Accessories are top contributors, with most transactions falling in the 20–30% margin range. Daily trends further confirm festive spikes and pricing consistency across categories.


profit ranking by season
Profit 52 66 77 84 91 96 97 100 105 106 108
Product Category
0.04K
0.02K
0.00K
Autumn/Festive
Winter
Season
Revenue Funnel: Festival vs Non-Festival
Revenue(INR)
100%
High
Medium
Low
914K
529K
43.9%
Customer Behavior & Seasonal Strategy Dashboard
Seasonal Profit Distribution
Autumn/Festive
Winter
Innerwear 69K
Ethnic Wear 49K
Trousers 46K
Footwear ...
Formal ...
Ethnic W...
Accessor...
Accessories 57K
Jeans 45K
Trousers 20K
Inner...
Footwear 52K
Shirt 44K
Form...
Shirt 20K
Jeans ...
Sales Mix by Quantity and Revenue Share with Festival Influence
Product Category Accessories Clothing Footwear Other
Profit Margin(%)
1,000
500
0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
% Revenue
Performance Overview
Product Category | Product Name | Sum of Quantity | Sum of Revenue | Sum of Total Cost | Sum
Accessories | Accessories | 115 | 163186 | 133817
Accessories | Accessories | 10 | 6760 | 5650
Accessories | Accessories | 64 | 77388 | 60849
Accessories | Accessories | 1 | 1604 | 1121
Accessories | Accessories | 43 | 56777 | 45403
Accessories | Accessories | 67 | 87379 | 66894
Clothing | Ethnic Wear | 79 | 106401 | 82922
Clothing | Ethnic Wear | 36 | 54640 | 45503
Clothing | Ethnic Wear | 66 | 94481 | 77989
Clothing | Ethnic Wear | 37 | 39960 | 31285
Weekday vs Weekend Revenue Analysis
Day Type Weekday Weekend
1M (30.54%)
2M (69.46%)
Customer-Wise Revenue Contribution
Customer Name
Priya Sen 348K
Arun Kumar 327K
Anita Roy 296K
Amit Sharma 293K
Deepak Yadav 270K
Suman Das 263K
0K
100K
200K
300K
Revenue(INR)
Revenue Over Time by Festival Status
Festival Impact High Low Medium
Revenue(INR)
100K
0K
0
5
10
15
20
25
30
35
Day


Revenue Contribution by Product Category and Item
Clothing
Ethnic Wear 161.04K
Shirt 149.04K
Trousers...
Other
Innerwear 206.91K
Formal Wear 109.85K
Jeans...
Footwear
Footwear 177.59K
Accessories
Accessories 169.95K
Sales Trends & Product Performance Overview
Average Cost vs Selling Price by Product Category
Avg Cost Price Avg Selling Price
Product Category
Footwear 1091 1389
Accessories 999 1272
Other 993 1237
Clothing 933 1218
0
500
1,000
1,500
₹ (Currency)
Distribution of Profit Margin (%)
Profit Margin Range
0–10% 20
10–20% 46
20–30% 52
30–40% 21
40–50% 11
50%+ 11
0
20
40
Count of Profit
Sum of Revenue by Product Category and Quantity
Product Cate...
Accessories Clothing Footwear Other
Sum of Revenue
100K
50K
0K
0
5
10
Quantity
Revenue vs Profit % by Product Category
% Revenue % Profit
% Revenue
0.15
0.10
0.05
0.00
0.170
0.142
0.064
0.055
Clothing
Other
Footwear
Accessories
Product Category
Month
December
Product Category
Accessories
Day Type
Weekday
Festival Impact
High
Daily Revenue, Cost & Profit Trend (Oct-Dec 2024)
Sum of Total Cost Sum of Revenue Sum of Profit
Amount (INR)
100K
50K
0K
0
5
10
15
20
25
30
35
Day
Monthly Revenue by Product Category
Product Category | December | November | October | Total
Accessories | 6760 | 87729 | 75457 | 169946
Footwear | 31940 | 75399 | 70254 | 177593
Other | 115146 | 85353 | 217281 | 417788
Clothing | 97439 | 102478 | 239553 | 439470
Total | 251285 | 350961 | 602551 | 1204797

4.Interpretation of Results and Recommendations:

4.1. Interpretation of Results:

- **Sales Patterns & Weekend Trends:** From the Daily Profit Trend (Oct–Dec) chart and the 20-Day Forecast of Daily Earnings, we observe that sales peaked during Durga Puja and Diwali, followed by a gradual dip in December due to discounting and in January post-festive cooldown. The Comparison of Weekday vs Weekend Sales chart clearly shows weekend sales outperforming weekdays, confirming that weekends are high-opportunity windows for revenue generation.
- **Product Category Performance:** According to the Revenue by Product Category, Pareto Chart — Revenue Contribution by Product, and Dual-Axis Chart — % Revenue vs % Profit by Product, the most valuable categories are Accessories, Innerwear, and Footwear, contributing the majority of both revenue and profit. In contrast, Jeans and Formal Wear perform poorly, showing low returns despite high inventory presence.
- **Inventory and Profit Imbalance:** The Multi-Line Chart — Revenue, Cost & Profit and Heatmaps Metrics by Product reveal that December's profits declined due to aggressive discounting on slow-moving stock like Shirts and Jeans. The Cost Price Trend per Product also shows price volatility in certain items, affecting margins. This imbalance reflects a need for better demand-aligned procurement.
- **Customer Behaviour & Loyalty:** pivot table shows that 7 customers contribute over 75% of the store's revenue, with repeat buyers like Arun Kumar and Priya Sen purchasing consistently across high-margin categories. Meanwhile, infrequent or discount-only buyers impact the bottom line less. These customer segments show clear divergence in value contribution and loyalty behaviour.

4.2. Recommendations:

- **Align Inventory with Seasonal Demand:** Use insights from the Total Profit by Season and Monthly Revenue Trends per Product charts to plan stock for high-demand categories like Accessories, Footwear, and Ethnic Wear. Begin procurement by August for October–November festivals to avoid rush stocking.

  Impact: Ensures stock readiness, avoids emergency purchases, and improves margins.
- **Rationalize Overstocked Items with Targeted Bundles:** Items like Jeans and Formal Wear, with low turnover shown in multiple performance charts, can be paired with

strong sellers in bundle deals (e.g., "Buy Footwear, get 40% Off on Jeans"). **Impact:** Frees up cash flow, avoids deep discounts, and moves stuck inventory.

- **Strengthen Loyalty with Customer Segmentation:** Based on the revenue contribution table, reward loyal customers (like Arun Kumar) with early access to new collections or tiered loyalty points. Less frequent buyers can receive personalized reactivation campaigns.

  Impact: Enhances retention, builds emotional loyalty, and drives repeat revenue.
- **Quarterly Forecasting for Smarter Planning:** While the 20-Day Forecast of Daily Earnings offers short-term planning, switching to quarterly rolling forecasts allows real-time adjustment based on recent sales shifts.

  Impact: Reduces overstock and stockouts, improves agility by up to 25%.
- **Capitalize on Weekend Sales:** The Comparison of Weekday vs Weekend Sales proves that weekends bring in higher revenue. Introduce recurring campaigns like "Weekend Combos" or "Saturday Surprise Discounts." Light midweek promotions can balance traffic dips.

  Impact: Maximizes sales during peak days, smooths weekly revenue flow.

Conclusion:

Raj Fashion's key revenue drivers are Footwear, Accessories, and Innerwear, while Trousers offer the highest profit margin. In contrast, Jeans and Formal Wear underperform and require clearance strategies.

Over 87% of revenue comes from just 7 loyal customers, making retention efforts crucial. Post-festival discounts reduced margins, highlighting the need for better demand forecasting.

Focusing on high-margin products, targeted promotions, and smarter inventory planning will help Raj Fashion boost profitability and sustain growth.

Reference Dataset:

Google Collab:

https://drive.google.com/drive/folders/1AHE_lp0iTMZfhHmvGUOGm455hS5eShK5?usp=sharing

(If it's not open directly, please copy the URL and then paste it)