# ****MERCHANDISE SALES ANALYSIS****

### A Comprehensive Report on Merchandise Sales Trends

## ****Created by:****

### Yagnik Patel

# ****1. Introduction****

## ****1.1 Purpose of the Project****

The primary purpose of this project is to analyze merchandise sales data to uncover trends and insights that can enhance decision-making in the retail business. By examining sales transactions, product categories, and revenue generation, this analysis aims to optimize inventory management, pricing strategies, and marketing efforts to boost profitability and customer satisfaction.

## ****1.2 Background Information****

The retail industry is highly competitive, with customer preferences varying based on product type, price, and seasonal trends. Understanding sales patterns and customer behavior allows businesses to refine their offerings, improve demand forecasting, and implement data-driven strategies for increased revenue and operational efficiency.

## ****1.3 Objectives****

* Analyze historical merchandise sales data.
* Identify trends in product performance, revenue distribution, and seasonal demand.
* Provide actionable recommendations to improve sales, customer engagement, and inventory management.

# ****2. Data Collection and Source****

## ****2.1 Data Sources****

The dataset used in this project consists of merchandise sales records from various locations. It includes transaction details such as order date, product category, buyer demographics, shipping details, sales price, and customer feedback. This dataset enables a comprehensive analysis of sales trends, customer preferences, and revenue patterns to improve business decision-making.

## ****2.2 Tables and Columns****

The dataset consists of a single table containing the following columns:

**2.2.1 Merchandise Sales Data Table**

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| **Order\_ID** | Int | Unique identifier for each order |
| **Order\_Date** | date | Date when the order was placed |
| **Product\_ID** | text | Unique identifier for each product |
| **Product\_Category** | text | Category of the merchandise (e.g., Clothing, Other) |
| **Buyer\_Gender** | text | Gender of the buyer (Male/Female) |
| **Buyer\_Age** | Int | Age of the buyer |
| **Order\_Location** | text | Location where the order was placed |
| **International\_Shipping** | text | Indicates whether the order required international shipping (Yes/No) |
| **Sales\_Price** | int | Price of a single unit of the product |
| **Shipping\_Charges** | int | Cost of shipping for the order |
| **Sales\_per\_Unit** | int | Sales value per unit of the product |
| **Quantity** | int | Number of units sold in the order |
| **Total\_Sales** | int | Total revenue generated from the order |
| **Rating** | int | Customer rating for the product (out of 5) |
| **Review** | text | Customer review about the product |

# ****3. Methodology****

This project followed a structured approach using **MS Excel** for data cleaning, **MySQL** for writing queries, and **MS Word** for report preparation.

## ****3.1 Data Cleaning in MS Excel****

To ensure accurate analysis, the dataset was cleaned in **MS Excel** using the following steps:

* **Removing Duplicates**: Duplicate entries were identified and deleted.
* **Handling Missing Values**: Missing values in important fields were either filled or removed.
* **Standardizing Formats**: Date and numerical values were formatted correctly.
* **Checking for Outliers**: Unusual values in price, quantity, and sales were analyzed and corrected.

## ****3.2 Data Analysis Using MySQL Queries****

After cleaning, SQL queries were used in **MySQL** to analyze sales data. Some key queries included:

* Calculating **total sales revenue**.
* Identifying **top-selling products** by quantity and revenue.
* Analyzing **sales by product category**.
* Finding **customer purchase trends** based on gender and age.
* Examining **monthly sales trends**.

## ****3.3 Report Preparation in MS Word****

After extracting insights, the final report was written in **MS Word**, following a structured format:

* **Introduction**: Outlining the purpose and objectives of the project.
* **Data Collection & Methodology**: Describing the dataset and the SQL techniques used.
* **Interpretation & Recommendations**: Presenting key findings from the analysis and suggesting improvements based on the results.
* **Conclusion**: Summarizing the overall impact of the analysis and providing final insights.

**4. Interpretation & Recommendations**

**1. What are the overall sales performance metrics for the merchandise store?**

**Interpretation:**

* **Total Orders:** 7,394, indicating steady customer demand.
* **Total Units Sold:** 12,334, showing strong product movement.
* **Total Revenue:** ₹856,462, reflecting a substantial market presence.
* **Average Rating:** 3.50, suggesting room for improvement in customer satisfaction.
* **Average Sales per Order:** ₹115.83, implying a moderate purchase value per transaction.

**Recommendations:**

1. **Enhance product quality & customer experience** to improve ratings.
2. **Upsell & bundle products** to increase average sales per order.
3. **Analyze sales trends** to optimize pricing and inventory management.

**2. What are the total revenue, total units sold, percentage contribution to overall revenue, average customer rating,**

**Interpretation of Output:**

* **Clothing** is the top-selling category, generating **74.40%** of revenue, with an average order value of **$172.03** and a moderate rating of **3.50**.
* **Ornaments** contribute **18.19%** of revenue, have a lower order value of **$69.06**, and a slightly lower rating of **3.45**.
* **Other** products make up **7.41%** of revenue but have the highest rating (**3.58**) and the lowest order value (**$44.25**).

**Recommendations:**

1. **Improve Clothing Customer Experience** – Given its **dominance in revenue** but **moderate rating**, enhancing product quality or service could boost customer satisfaction and retention.
2. **Reassess Ornaments Category** – A lower rating suggests potential quality or pricing concerns; consider product improvements or targeted promotions.
3. **Capitalize on "Other" Products' High Rating** – Their **strong customer satisfaction** suggests an opportunity to **expand product offerings or improve marketing** to increase sales.
4. **Upsell and Bundle Low Order-Value Categories** – Since Ornaments and Other products have lower average sales per order, offering **bundles or discounts** could drive higher spending per transaction.

**3. What are the total revenue, total units sold, percentage contribution to total revenue, average customer rating, and average sales per order for each product, ranked by revenue?**

**Interpretation :**

* **BF1548** is the **best-selling product**, contributing **22.26% of total revenue**, but has a **moderate rating of 3.50** and an **average sales per order of $127.35**.
* **BF1543 and BF1550** follow closely with **16.86% and 16.31% revenue shares**, respectively. They have **higher average order values ($200.27 and $186.25, respectively)** and **slightly better ratings (~3.53-3.57)**.
* **BF1549 ($234.89 per order) and BF1546 ($205.82 per order)** have **high order values but lower sales volume**, indicating they might be premium-priced products.
* **BF1551 ($50.49 per order)** has relatively **low revenue but high sales volume**, suggesting it’s a lower-priced, frequently purchased item.
* The lowest-ranked products (**BF1555, BF1553, BF1545**) contribute less than **3.5%** each to total revenue.

**Recommendations:**

1. **Optimize Pricing & Marketing for Top Products** – **BF1548, BF1543, and BF1550** are the biggest revenue drivers. Investing in promotions, bundling, and inventory management will maximize profitability.
2. **Improve Customer Satisfaction** – Moderate ratings (~3.40-3.50) for top-selling products indicate **potential quality or service issues**. Collect customer feedback and address concerns.
3. **Boost Sales for High Order-Value Products** – **BF1549 and BF1546** have **high average order values but lower sales volume**. Targeted discounts, better marketing, or bundling could increase demand.
4. **Increase Visibility of Low Revenue Products** – **BF1551, BF1552, BF1544** have **lower sales per order but decent ratings**. Consider strategic promotions or upselling opportunities.
5. **Analyze BF1555 for Growth** – With only **1.01% revenue contribution** but a decent rating (**3.57**), explore **ways to boost its demand** through bundling, discounts, or better placement.

**4. What are the total revenue, total units sold, percentage contribution to overall sales, average customer rating, and average sales per order for each order location, ranked by revenue?**

**Interpretation :**

* **Sydney** has the **highest revenue ($48,049)** despite **relatively low unit sales (309)**, indicating **higher-value purchases ($261.14 per order)** and a **strong rating (3.66)**.
* **San Francisco, New Jersey, and Mumbai** follow closely in revenue, but their **average order values ($99.81, $91.91, $203.82, respectively)** vary, with Mumbai having a high **spending per order**.
* **New Delhi ($207.21), Manchester ($155.89), London ($168.08), and Liverpool ($163.36)** have **high average order values**, meaning customers are making larger purchases despite lower unit sales.
* **Paris ($27,857) and Montreal ($23,644) rank low in revenue**, with Montreal contributing just **2.76%** of total sales.
* **Dublin has the highest rating (3.71), while Glasgow has the lowest (3.34)**, suggesting potential quality or service issues in lower-rated locations.

**Recommendations:**

1. **Capitalize on High-Spending Locations (Sydney, London, New Delhi)** – Since these locations have **higher order values**, **targeted marketing, premium product offerings, and loyalty programs** can further boost revenue.
2. **Improve Sales in Moderate Revenue Locations (San Francisco, New Jersey, Mumbai)** – These locations generate decent sales but have **lower average order values**, meaning **bundling or upselling strategies** could be effective.
3. **Address Low-Rated Locations (Glasgow, Mumbai, Miami)** – Customer ratings suggest **potential service or product quality issues** in certain locations. **Survey customer feedback and implement improvements** to increase satisfaction.
4. **Enhance Low Revenue Locations (Montreal, Paris, Toronto)** – Despite good potential markets, these locations have **lower sales**. Consider **localized promotions, influencer partnerships, or region-specific discounts**.
5. **Expand in High-Growth Potential Areas (Dublin, Manchester, Cardiff)** – These cities have **strong ratings and decent order values**, suggesting **opportunities for expansion and stronger market penetration**.

**5. How do sales, revenue, percentage contribution, customer ratings, and average sales per order compare between male and female buyers?**

**Interpretation :**

* **Male buyers contribute the majority of revenue (70.09%)**, purchasing **8,698 units** with a **total revenue of $600,329**.
* **Female buyers account for 29.91% of revenue**, with **3,636 units sold and $256,133 in revenue**.
* **Both genders have the same average rating (3.50),** indicating **similar satisfaction levels**.
* **Average order values are nearly identical** (**$115.71 for males, $116.11 for females**), meaning spending behavior per transaction is comparable.

**Recommendations:**

1. **Increase Female Buyer Engagement** – Since female buyers contribute **less revenue (29.91%)**, targeted **marketing campaigns, personalized promotions, and gender-specific product recommendations** could drive more sales.
2. **Expand Male Buyer Retention Strategies** – As the dominant revenue source, **loyalty programs, discounts on repeat purchases, and exclusive product offerings** could enhance long-term engagement.
3. **Investigate Equal Satisfaction Ratings** – Since both genders have a **moderate rating (3.50)**, deeper customer feedback analysis could reveal **common pain points that need improvement**.
4. **Explore Gender-Specific Preferences** – Identify which product categories perform better among male or female buyers and optimize inventory and marketing strategies accordingly.
5. **Leverage Cross-Selling Opportunities** – Since both genders have **similar average order values**, **bundling related products** or introducing gender-neutral promotions may boost overall revenue.

**6. How do sales, revenue, percentage contribution, customer ratings, and average sales per order compare between domestic and international shipping orders?**

**Interpretation of Output:**

* **Domestic orders (No International Shipping) generate more revenue ($469,606, 54.83%)** and have **higher unit sales (8,521 units)** but a **lower average sales per order ($91.38)**.
* **International orders contribute slightly less revenue ($386,856, 45.17%)**, with **fewer units sold (3,813)** but a **much higher average order value ($171.55)**.
* **Customer ratings are similar (3.49 domestic, 3.51 international),** suggesting **comparable satisfaction levels** across both categories.

**Recommendations:**

1. **Maximize International Sales Potential** – Despite lower unit sales, international orders have a **higher spending per order ($171.55 vs. $91.38)**. Expanding **shipping options, offering localized promotions, and streamlining the checkout process** could drive more sales.
2. **Increase Domestic Order Value** – Since domestic orders contribute more revenue but have a lower **average order value**, encourage **bulk purchases, bundling, and loyalty discounts** to increase per-transaction spending.
3. **Ensure Efficient International Logistics** – Given the high revenue share from international orders, investing in **faster shipping, better tracking, and improved return policies** could boost trust and satisfaction.
4. **Analyze Pricing & Product Preferences by Region** – Certain products may be more popular in international markets. **Identifying regional demand trends** can help optimize **inventory and marketing strategies**.
5. **Address Customer Satisfaction Across Both Segments** – With **ratings around 3.5**, there may be **common issues affecting both domestic and international buyers**. Conducting **customer surveys and reviews analysis** can pinpoint improvement areas.

**7. How do sales, order distribution, revenue, and customer ratings compare between free and paid shipping orders?**

**Interpretation :**

* **Free shipping accounts for 69.09% of total orders**, generating **$469,606 in revenue** with an **average order value of $91.38**.
* **Paid shipping makes up only 30.91% of orders**, but these transactions have a **much higher average order value ($171.55)**, resulting in **$386,856 in total revenue**.
* **Customer ratings are nearly identical (3.49 for free shipping, 3.51 for paid shipping),** meaning shipping fees **do not significantly impact satisfaction levels**.

**Recommendations:**

1. **Leverage Free Shipping for Higher Sales Volume** – Since **free shipping attracts more orders (69.09%)**, consider offering it for **more products or setting a minimum purchase threshold** to encourage higher-value transactions.
2. **Maintain Premium Perception for Paid Shipping** – Paid shipping orders **have a significantly higher average order value ($171.55 vs. $91.38)**, suggesting that customers who pay for shipping tend to buy more. Offering **express shipping or premium packaging** could further justify the cost.
3. **Optimize Free Shipping Costs** – If free shipping is cutting into profit margins, explore **partnering with cost-effective logistics providers or adjusting product pricing slightly** to absorb the shipping cost.
4. **A/B Test Free vs. Paid Shipping Strategies** – Consider experimenting with **"Free Shipping for Orders Above $X"** to see if it increases paid shipping order values while still maintaining high sales volume.
5. **Improve Customer Satisfaction Across Both Categories** – Since **ratings remain moderate (~3.5)** for both shipping types, further analysis of **shipping speed, delivery experience, and packaging quality** could help improve overall customer perception.

**8. What is the Monthly sales trend for each product in terms of total units sold, revenue, and average sales per order?"**

**Interpretation:**

The query tracks **monthly sales trends per product**, showing **total units sold, revenue, and average sales per order**. Sales **peak in Q2 (May–June)** and **drop sharply in Q4 (Oct–Nov)**. High-volume products like **BF1551 have lower revenue**, while **premium products (BF1549, BF1550, BF1546) maintain high average sales per order**.

**Recommendations:**

1. **Stock and market aggressively in Q2** to capitalize on peak sales.
2. **Boost Q4 sales with discounts or bundles** to prevent sharp decline.
3. **Re-evaluate pricing for high-volume, low-revenue products.**
4. **Investigate November’s low sales** to address potential issues.

**9. What is the Quaterly sales trend for each product in terms of total units sold, revenue, and average sales per order?**

**Interpretation:**

* **Q2 (Apr–Jun) consistently shows the highest sales and revenue**, peaking in 2024.
* **Q4 (Oct–Dec) experiences a sharp decline**, with sales dropping across all products.
* **High-priced products (BF1549, BF1546, BF1550) maintain strong revenue despite lower units sold.**
* **High-volume products (BF1548, BF1551) generate lower revenue per order.**

**Recommendations:**

1. **Maximize Q2 marketing efforts** to sustain strong sales.
2. **Introduce Q4 promotions** (discounts, bundles) to prevent revenue drop.
3. **Adjust pricing for high-volume, low-revenue products** to boost profitability.
4. **Explore Q4 sales drop causes** (seasonality, competition, pricing).

**10. What is the Yearly sales trend for each product in terms of total units sold, revenue, and average sales per order?**

**Interpretation:**

* **Significant sales growth in 2024** across all products, with top sellers (BF1548, BF1543, BF1550) more than quadrupling their revenue.
* **Product BF1548 leads in both sales volume and revenue**, showing strong customer demand.
* **High-priced products (BF1549, BF1546) maintain premium pricing while increasing sales**, contributing to higher revenue.
* **Low-cost, high-volume products (BF1545, BF1551) see substantial sales growth** but lower revenue per order.

**Recommendations:**

1. **Sustain momentum for top-selling products** (BF1548, BF1543, BF1550) with continued promotions and inventory planning.
2. **Reevaluate pricing for high-volume, low-revenue products** (BF1545, BF1551) to improve profitability.
3. **Focus on premium product marketing** (BF1549, BF1546) to maximize high-value customer retention.
4. **Analyze demand drivers behind the surge in 2024** to replicate successful strategies in future years.

**11. How do Monthly sales trends vary across product categories, and which categories generate the highest revenue?**

**Interpretation:**

* **Clothing consistently generates the highest revenue and sales volume** each month, peaking in **May and July 2024** with over **$58K–$62K** in revenue.
* **Ornaments maintain steady sales**, with average revenue between **$10K–$14K** monthly, peaking in **September 2024**.
* **Other category has lower but stable sales**, with revenue ranging from **$4K–$6K** per month.
* **November 2024 shows a sharp decline across all categories**, likely due to incomplete data or seasonal shifts.

**Recommendations:**

1. **Capitalize on peak months (May, July) for Clothing** by running promotions and ensuring ample inventory.
2. **Strengthen marketing for Ornaments and Other categories** to boost their contribution to overall revenue.
3. **Investigate the drop in November 2024** and adjust sales strategies for potential seasonal dips.
4. **Analyze factors driving high Clothing sales in May and July** to replicate success in weaker months.

**12. How do Quaterly sales trends vary across product categories, and which categories generate the highest revenue?**

**Interpretation:**

* **Clothing dominates quarterly revenue**, peaking in **Q2 2024 ($164.7K) and Q1 2024 ($157.1K)**.
* **Ornaments maintain stable sales**, averaging **$38K–$39K per quarter**, with a peak in **Q3 2024**.
* **Other category has the lowest revenue**, staying between **$9K–$16K per quarter**, but with a gradual increase in Q2 and Q3.
* **Q4 2024 sees a significant drop across all categories**, especially for Clothing (down to **$61K**).

**Recommendations:**

1. **Maximize Clothing sales in Q1 & Q2** by increasing production and marketing during peak seasons.
2. **Boost Ornaments’ visibility in Q4**, possibly through holiday promotions to sustain sales.
3. **Investigate the sharp Q4 decline** and adjust inventory, pricing, or promotions accordingly.
4. **Enhance Other category offerings** by identifying best-selling products and expanding marketing efforts.

**13. How do Yearly sales trends vary across product categories, and which categories generate the highest revenue?**

**Interpretation:**

* **Clothing leads in revenue**, growing from **$99.6K in 2023 to $537.6K in 2024**—a **440% increase** in sales.
* **Ornaments saw steady growth**, increasing from **$25.8K in 2023 to $129.9K in 2024**—a **404% increase**.
* **Other category also expanded**, rising from **$9.9K in 2023 to $53.5K in 2024**—a **439% increase**.
* **Average sales per order remained consistent**, with **Clothing ($172), Ornaments ($68), and Other ($44)** showing minor variations.

**Recommendations:**

1. **Expand Clothing production and marketing** as it remains the top-performing category.
2. **Leverage the strong growth of Ornaments** by introducing new designs and targeted promotions.
3. **Identify best-selling products in Other category** and explore bundling or upselling strategies.
4. **Analyze demand drivers for 2024 growth** to replicate success in future years.

**14. Which age group contributes the most to sales across different product categories?**

**Interpretation:**

* **Clothing is the top-selling category** across all age groups, with **total revenue of $537.6K in 2024**.
* **Ornaments and Other categories show steady growth**, with **$129.9K and $53.5K revenue in 2024**, respectively.
* The **age group with the highest sales contribution is missing from the output**, but a deeper analysis would help identify the most profitable demographic.

**Recommendations:**

1. **Target marketing campaigns based on top-spending age groups** to maximize revenue.
2. **Offer personalized promotions** for different age segments, focusing on high-value buyers.
3. **Expand high-performing product lines** in the most engaged age brackets.
4. **Analyze buyer behavior trends** to refine pricing, product bundling, and seasonal discounts.

**15. Which product has the highest revenue in each product category?**

**Interpretation:**

* **BF1548 (Clothing) is the top performer**, generating **$190.6K in revenue with 2,421 units sold**.
* **BF1551 (Ornaments) leads its category**, with **$47.6K revenue and 1,586 units sold**.
* **BF1544 (Other category) dominates with $28.1K revenue** from 1,219 units.
* **Average ratings are relatively low (between 3.42 and 3.57)**, indicating room for product or service improvement.

**Recommendations:**

1. **Optimize inventory** for these best-selling products to prevent stockouts.
2. **Improve customer experience and product quality** to boost ratings.
3. **Upsell and cross-sell these top products** with related items.
4. **Leverage customer feedback** to refine marketing and enhance product appeal.

**16. Which products experience the highest demand fluctuations?**

**Interpretation:**

* **BF1545 (Other) has the highest demand fluctuation (1.17 STDDEV)**, indicating inconsistent sales trends.
* **BF1543 (Clothing) and BF1547 (Ornaments) follow closely**, with fluctuations of 1.13 and 1.12, respectively.
* **Clothing and Ornaments categories show more volatility** compared to Other products.
* Fluctuations suggest seasonal demand, promotional impacts, or inconsistent consumer preferences.

**Recommendations:**

1. **Investigate seasonal or promotional trends** to identify demand patterns.
2. **Adjust inventory and production strategies** to avoid overstocking or stockouts.
3. **Offer discounts or marketing campaigns** to stabilize demand for volatile products.
4. **Analyze customer feedback** to understand reasons behind demand swings.

**17. What is the monthly trend in total orders, units sold, and revenue?**

**Interpretation:**

* **Peak sales in May 2024 (₹80,704 revenue, 1,116 units, 660 orders)** suggest a seasonal or promotional impact.
* **Revenue dipped significantly in November 2024 (₹9,712),** indicating a slowdown in demand.
* **Fluctuations in orders and revenue** suggest varying customer interest or external influences.

**Recommendations:**

1. **Identify key drivers for May’s peak sales** and replicate strategies in other months.
2. **Boost marketing and promotions in low-performing months (e.g., November)** to drive engagement.
3. **Optimize inventory and staffing** to match demand cycles.

**18. How does international shipping impact sales across product categories?**

**Interpretation:**

* **Domestically shipped products generate higher revenue.** E.g., BF1548 (No: ₹111,345 vs. Yes: ₹79,295).
* **International shipping accounts for fewer orders and lower revenue.** Likely due to higher costs or logistics constraints.
* **Clothing leads in both domestic and international sales,** but international demand is lower across all categories.

**Recommendations:**

1. **Optimize international pricing & shipping policies** to attract more global buyers.
2. **Promote high-performing products (e.g., BF1548) internationally** through targeted marketing.
3. **Identify barriers to international sales** (e.g., customs fees, shipping times) and address them.

**19. How do shipping charges impact order volume, revenue, and customer satisfaction?**

**Interpretation:**

* **54.83% of total revenue** comes from orders with **free shipping (₹0 charges)**, suggesting a strong customer preference for free shipping.
* Orders with **higher shipping charges (₹70-₹100)** have **higher average sales per order (₹205.45 - ₹261.14)** but contribute less to overall revenue.
* **Average rating varies slightly (3.42 - 3.66)**, indicating shipping charges have minimal impact on customer satisfaction.
* Orders decrease as **shipping charges increase**, showing price sensitivity among customers.

**Recommendations:**

1. **Offer free shipping thresholds** (e.g., free shipping on orders above ₹500) to encourage higher cart values.
2. **Optimize shipping costs** by partnering with logistics providers to balance affordability and profitability.
3. **Test promotions like discounted shipping** for first-time buyers or loyal customers to boost conversions.

# ****5. Conclusion****

This project successfully analyzed merchandise sales data to uncover key insights related to revenue, product performance, customer preferences, and sales trends. By leveraging **MS Excel** for data cleaning, **MySQL** for query-based analysis, and **MS Word** for report documentation, the study provided a structured approach to data-driven decision-making.

The findings revealed that **Clothing is the dominant product category**, generating the highest revenue, while **Ornaments and Other categories show steady demand**. **Male buyers contribute the majority of revenue**, but **female engagement can be improved through targeted marketing**. **International orders have higher order values**, indicating opportunities for expanding global sales. Additionally, **seasonal trends affect sales performance**, with peaks in **Q2 and declines in Q4**, emphasizing the need for strategic promotions.

To optimize sales performance, **enhancing product quality, implementing bundling strategies, and refining pricing models** are essential. Addressing **customer satisfaction through better service and targeted promotions** will further improve business growth. By acting on these insights, the merchandise store can **maximize profitability, streamline inventory management, and improve customer retention** for long-term success.